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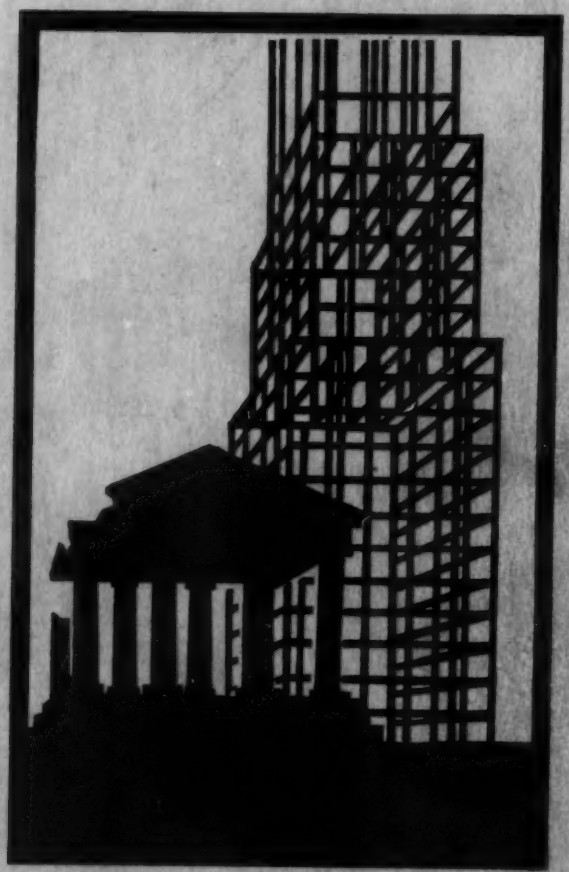
THE ARCHITECTURAL RECORD



DECEMBER
1929

BERN
HARD

TRUSCON
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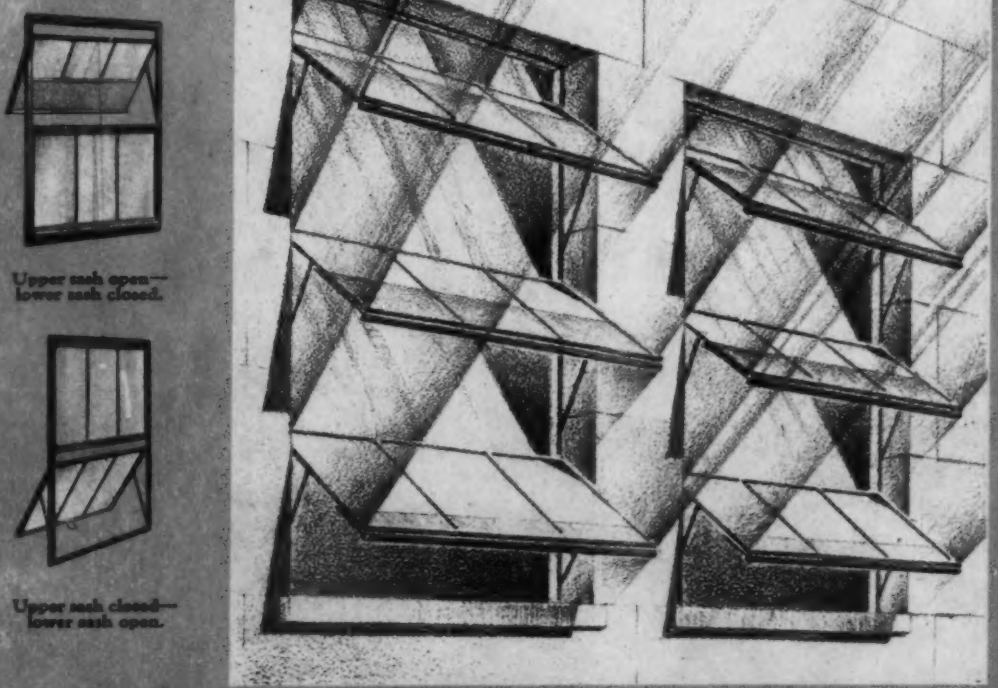
AWNING TYPE
STEEL WINDOWS



Upper sash open—lower sash closed.

Upper sash closed—lower sash open.

Upper two sash open—bottom sash closed.

Bottom sash open—upper two sash closed.

Invented and Developed by John J. Donovan, Architect, A. I. A.

for Daylighting and Ventilation of OFFICES, SCHOOLS, EDUCATIONAL *and* INSTITUTIONAL BUILDINGS

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THE ARCHITECTURAL RECORD

Published Monthly by F. W. Dodge Corporation, 115-119 W. 40th St., New York
Truman S. Morgan, *President* Sanford D. Stockton, Jr., *Secretary* Howard J. Barringer, *Treasurer*

VOLUME 66 DECEMBER, 1929 NUMBER 6

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Yearly Subscription: United States, Insular Possessions and Cuba, $3.00; Canada, $3.60; Foreign $4.00. Single Copy 60c. Member, AUDIT BUREAU OF CIRCULATIONS *and* ASSOCIATED BUSINESS PAPERS, INC. Copyright, 1929, by F. W. DODGE CORPORATION. All rights reserved.

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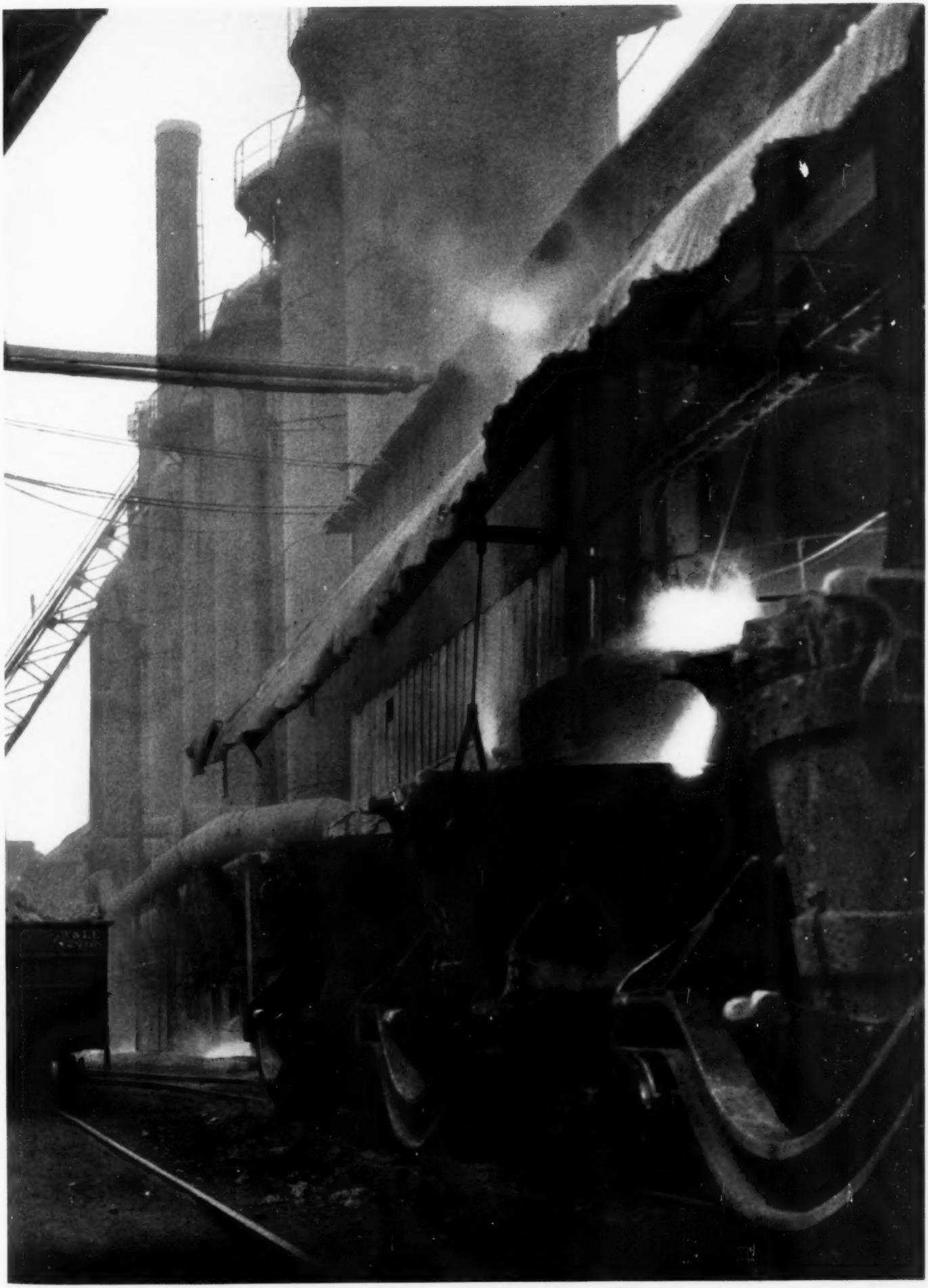
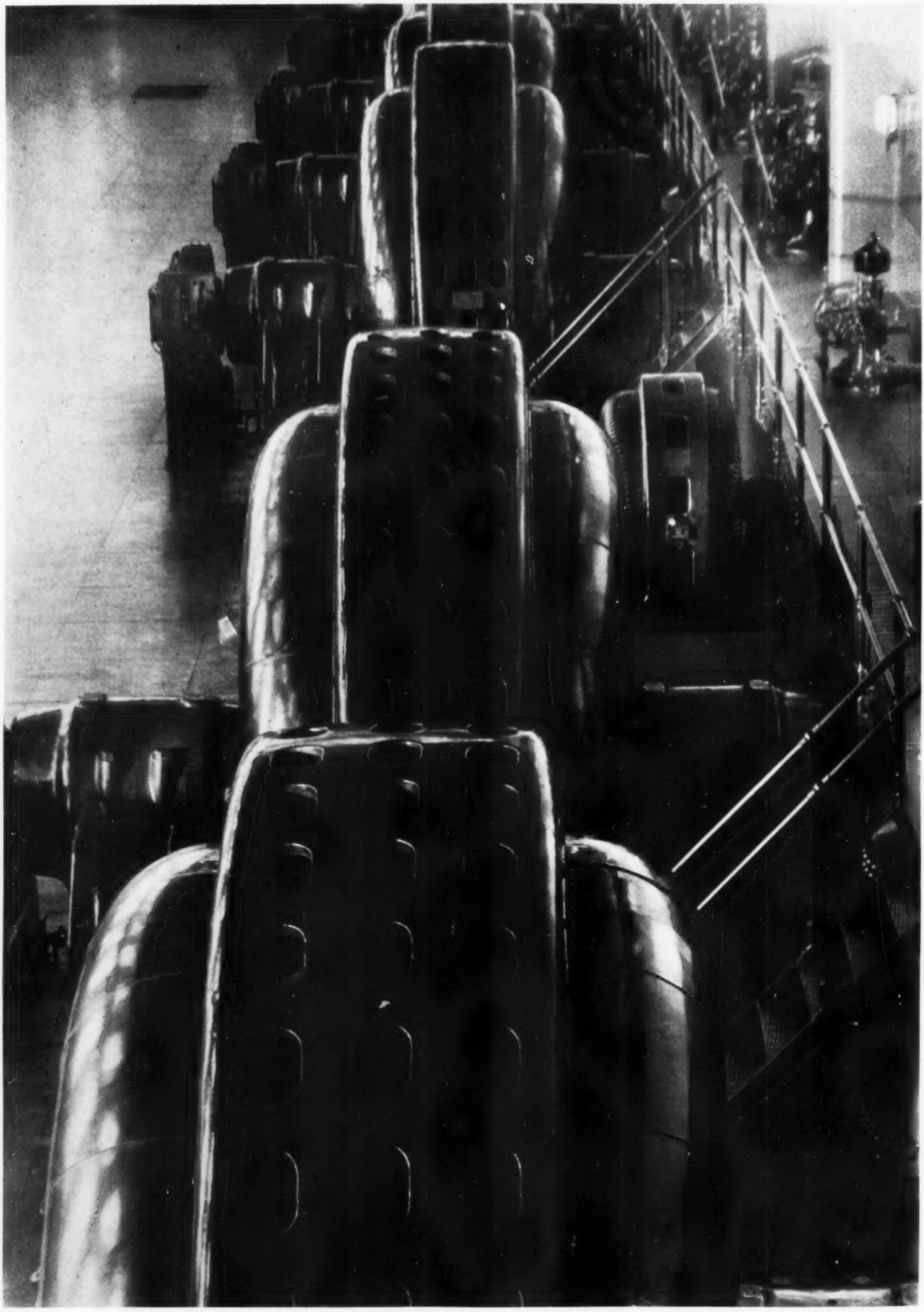


OPEN HEARTH FURNACE: FILLING THE LADLES

CYCLORAMA, THE GUILD THEATRE, NEW YORK

STAGE MECHANISM, THE GUILD THEATRE, NEW YORK



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THE ARCHITECTURAL RECORD

AN ILLUSTRATED MONTHLY MAGAZINE OF ARCHITECTURE & THE ALLIED ARTS & CRAFTS

VOLUME 66 DECEMBER 1929 NUMBER 6

THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS

THE PROBLEM:

To build a museum and art school with enough rental space above to financially support both. It was decided that an apartment hotel would furnish the most satisfactory solution, as such a building could house the students together with its other inhabitants.

The character of the neighborhood is indicated by the proximity of Columbia University, the Horace Mann School, International House, the Hispanic Museum, the American Indian Museum, and the Museum of Natural History.

•

PLAN:

The Museum was built primarily to exhibit the paintings of Professor Nicholas Roerich. It also houses a school of architecture, painting, sculpture, interior decorating, music, ballet dancing, and the stage. The main floor contains the Museum and provides entrances to the dining room for the public and that for the hotel and to the small theatre that connects with the school.

Apartments consist of suites of 1, 2, 3 or occasionally more rooms, equipped with service pantry and refrigeration, and a private bath for every bedroom. Absence of court gives every major room an outside exposure.

•

STRUCTURAL SCHEME:

Structural steel, cinder concrete arches, brick and terra cotta veneer.

Unobstructed corner windows, introduced by cantilevering the corners of the floors, were found to be not only architecturally effective, giving horizontal lines and reinforcing the vertical ones, but also were successful renting inducements for the view they provide.

•

TEXTURE AND COLOR:

Rough brick, with terra cotta of the same texture. Building grades from black at base through red to white at top. Grille work painted with aluminum paint and toned down with color varnish.

•

COST:

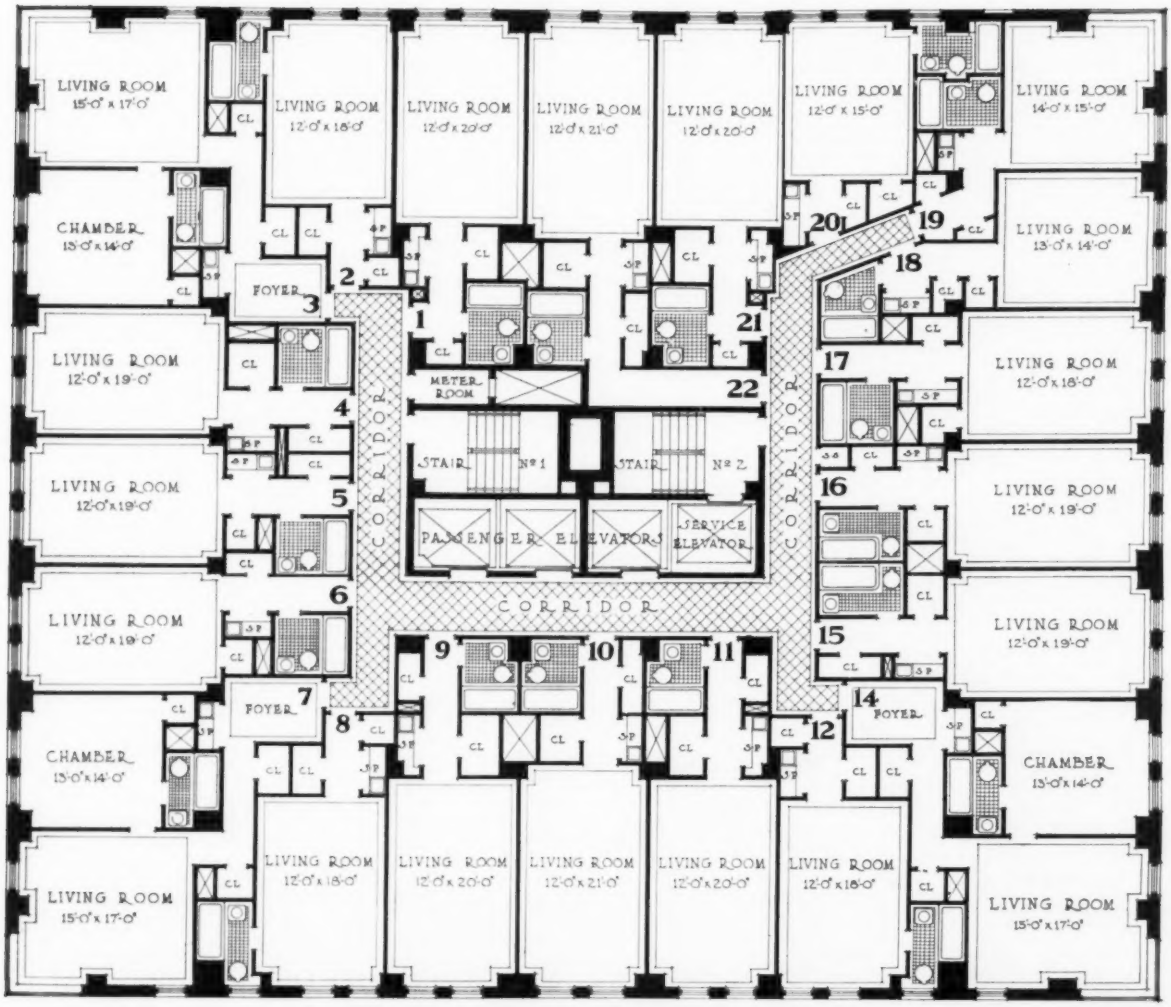
Estimated at about 65c per cubic foot.

EDITORIAL NOTE: Additional photographs of this building will be found in the rotogravure section beginning on page 527.

GENERAL VIEW

THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS


LIVING ROOM 15'-0" x 17'-0"
LIVING ROOM 12'-0" x 18'-0"
LIVING ROOM 12'-0" x 20'-0"
LIVING ROOM 12'-0" x 21'-0"
LIVING ROOM 12'-0" x 20'-0"
LIVING ROOM 12'-0" x 15'-0"
LIVING ROOM 14'-0" x 15'-0"
CHAMBER 15'-0" x 14'-0"
FOYER
LIVING ROOM 13'-0" x 14'-0"
LIVING ROOM 12'-0" x 19'-0"
METER ROOM
LIVING ROOM 12'-0" x 18'-0"
STAIR No. 1
STAIR No. 2
LIVING ROOM 12'-0" x 19'-0"
PASSENGER ELEVATORS
SERVICE ELEVATOR
CORRIDOR
LIVING ROOM 12'-0" x 19'-0"
LIVING ROOM 12'-0" x 19'-0"
FOYER
CHAMBER 15'-0" x 14'-0"
CHAMBER 15'-0" x 14'-0"
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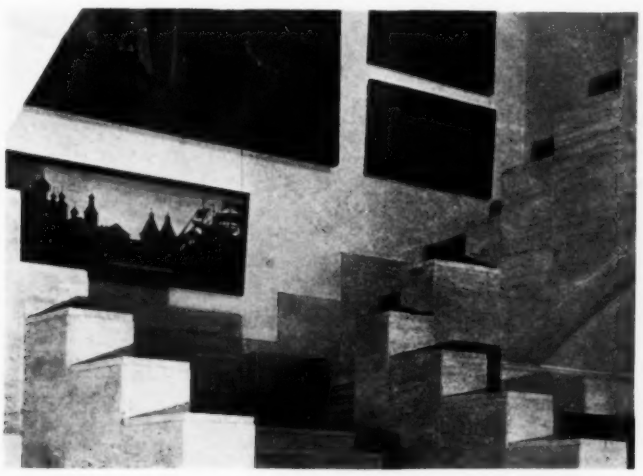
TYPICAL FLOOR PLAN

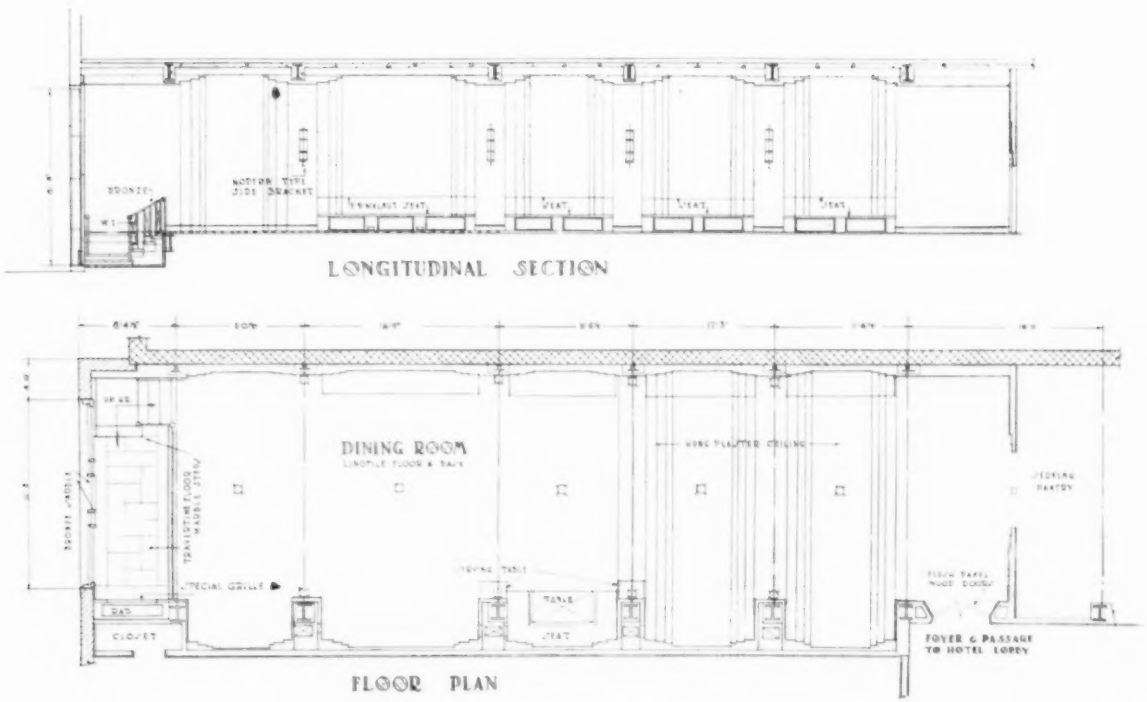


STAIRWAY DETAIL

THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS

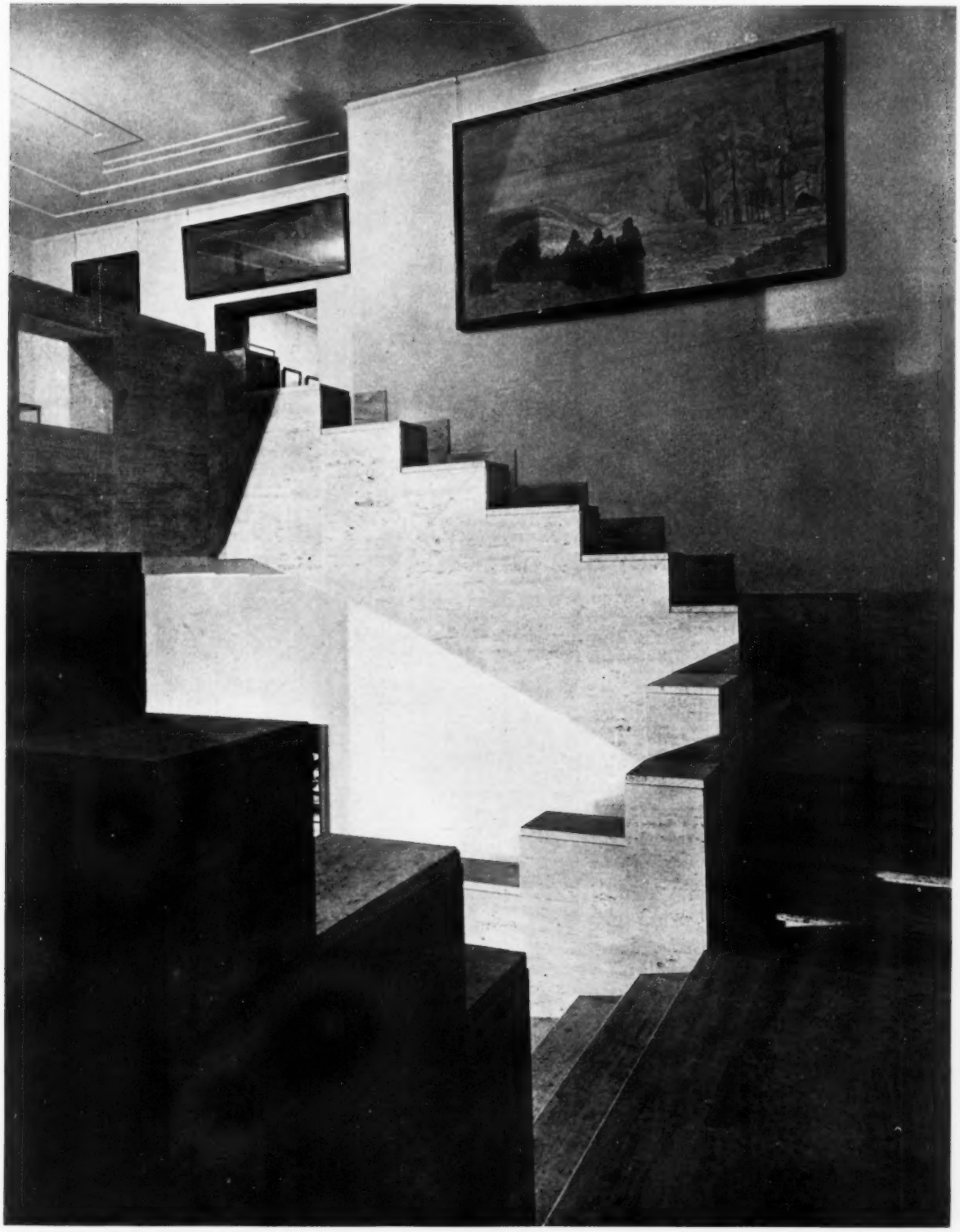
VIEW OF DINING ROOM



SECTION AND PLAN OF DINING ROOM

THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS



STAIRWAY

THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

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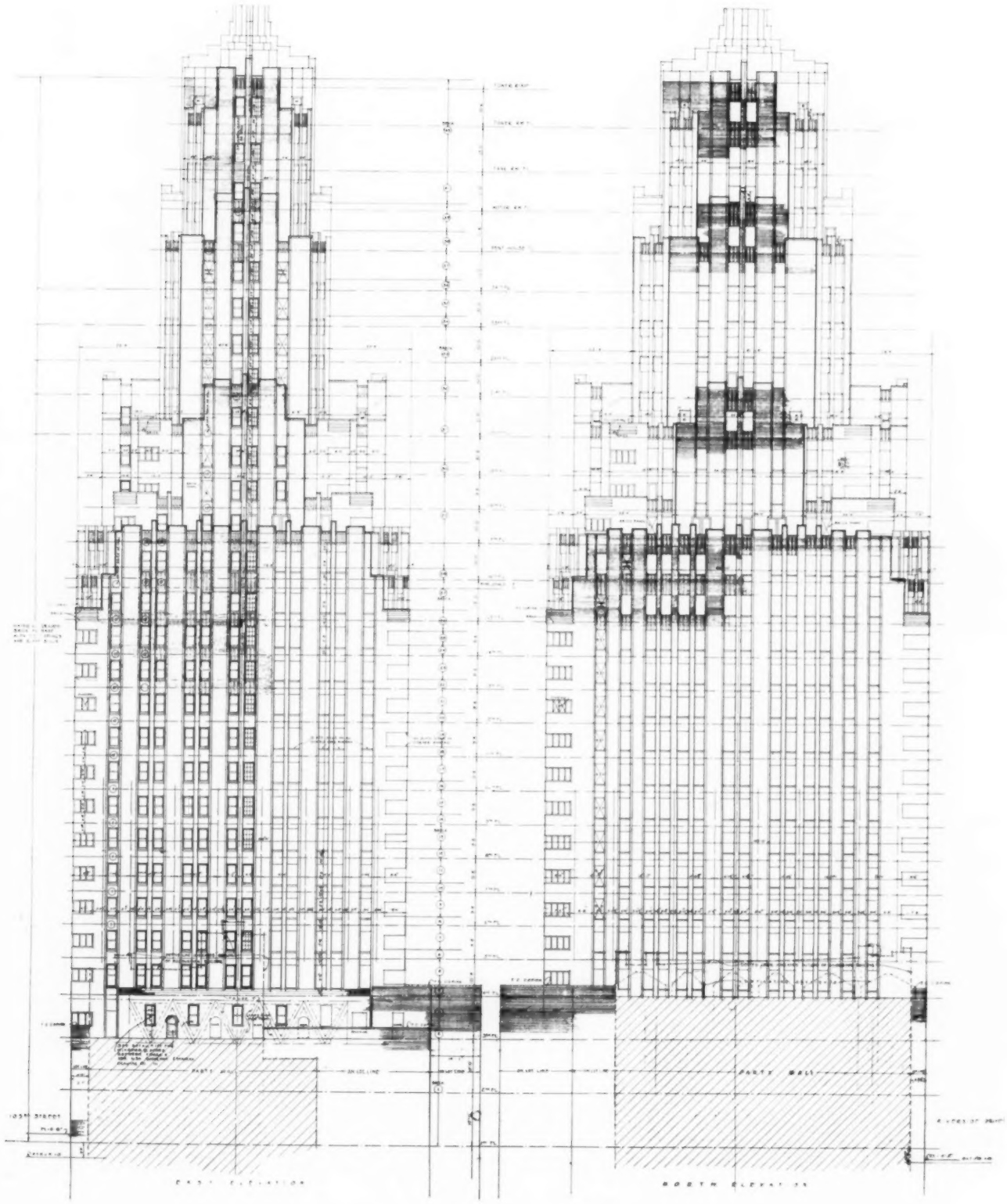
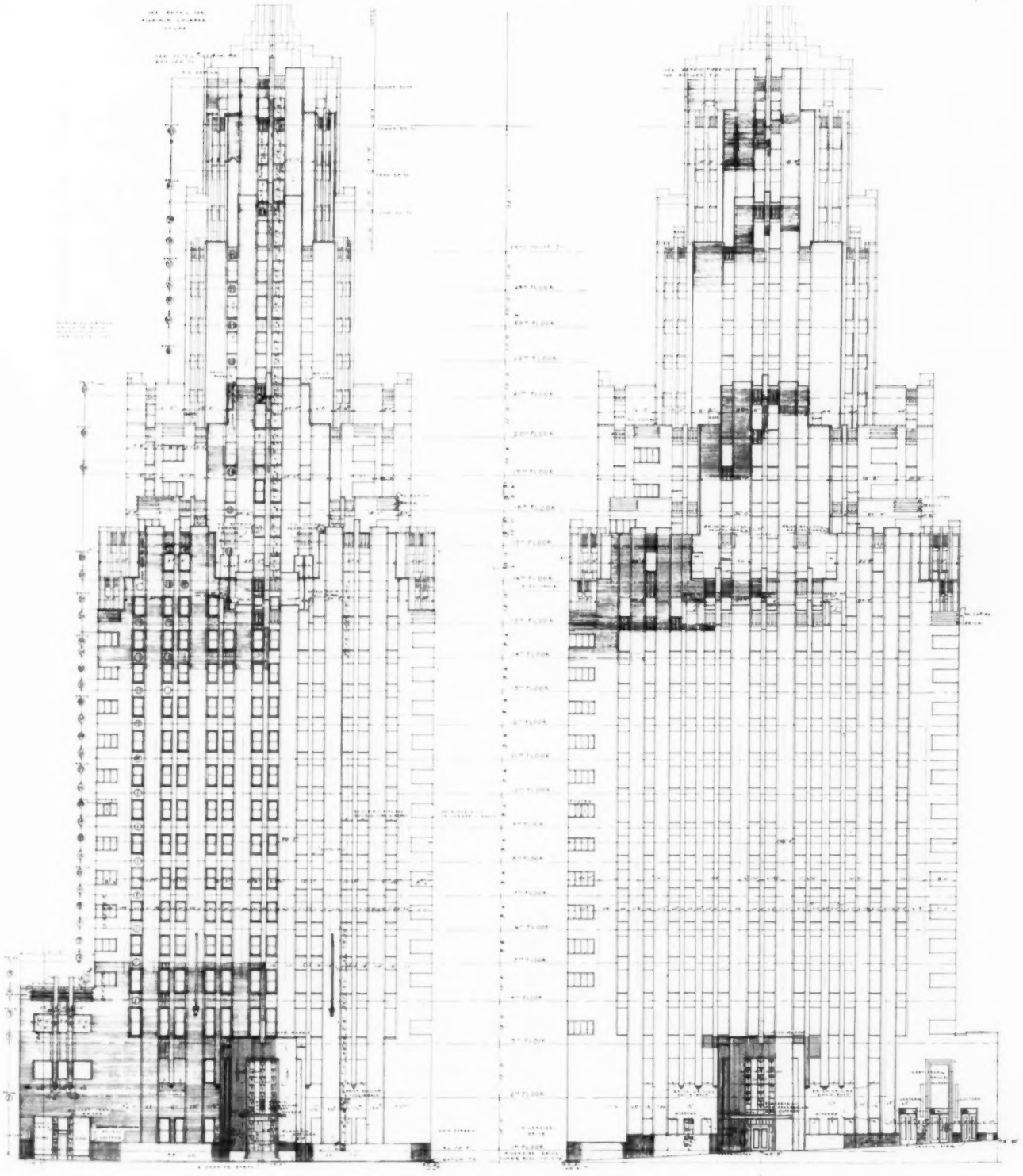


NORTH AND EAST ELEVATIONS

THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS



WEST AND SOUTH ELEVATIONS

THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

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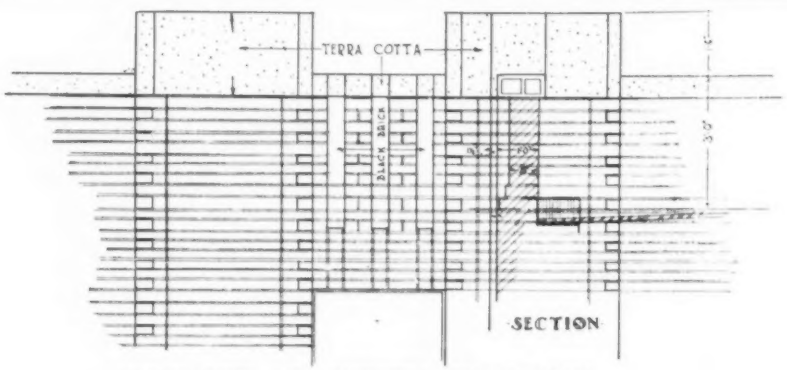
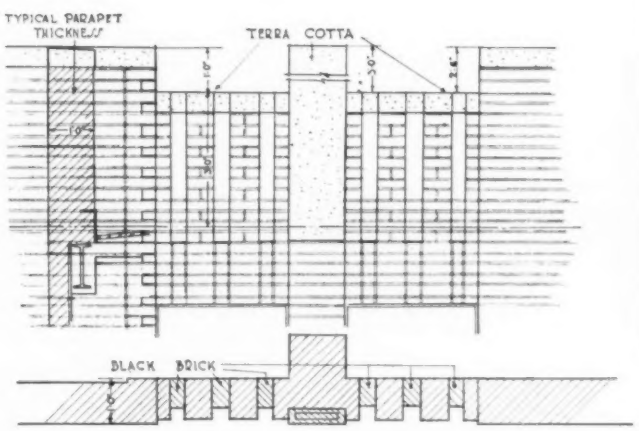
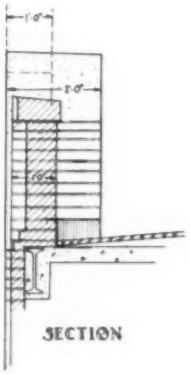
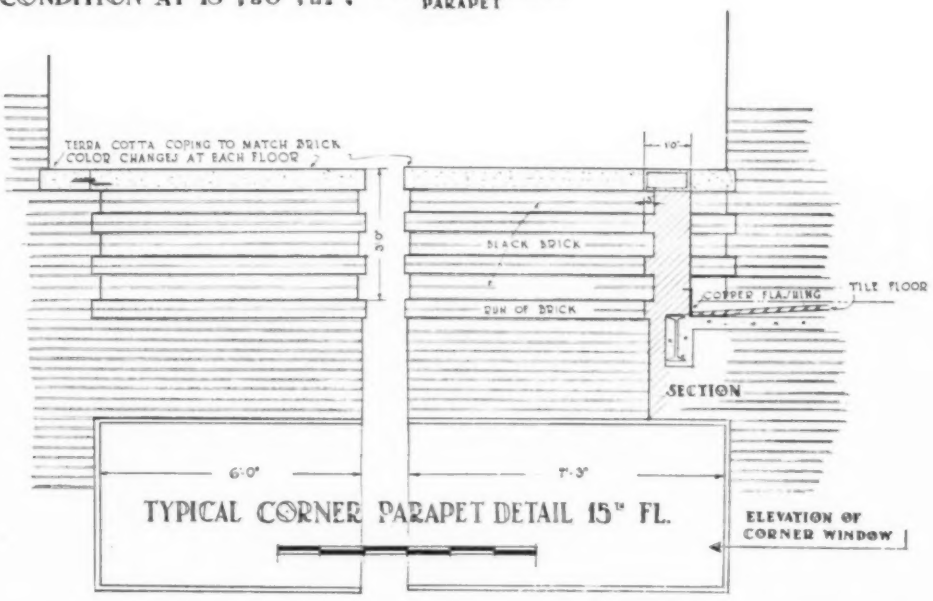


17TH FLOOR ON NORTH ELEVATION





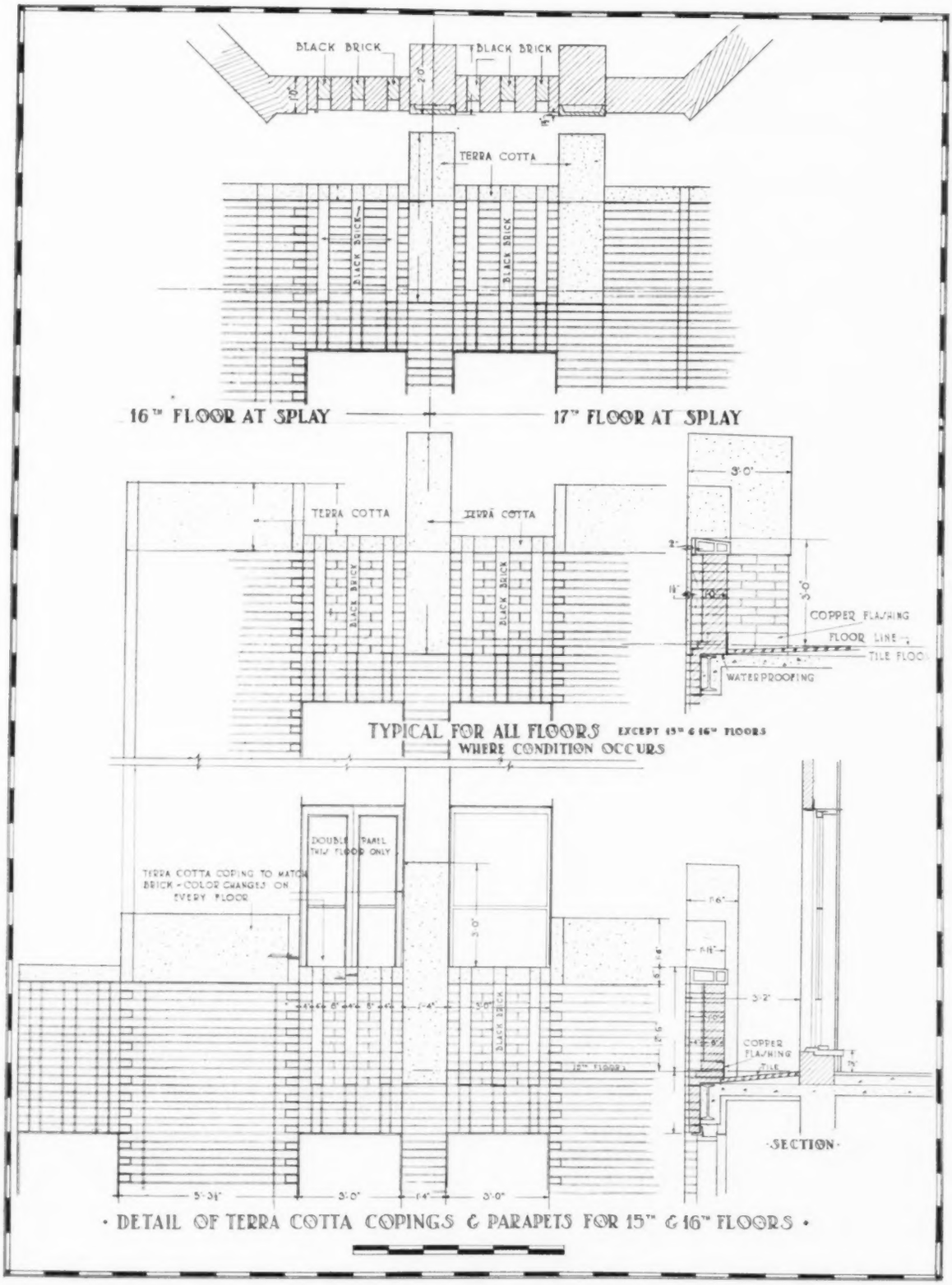
CONDITION AT 18TH, 20TH, 21ST ROOF & PENT HOUSE PARAPET



TYPICAL CORNER PARAPET DETAIL 15TH FL.

THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS



THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS

LOOKING UP AT WINDOWS

THE ROERICH MUSEUM AND MASTER APARTMENT BUILDING, NEW YORK

CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS

THE BOSTON AVENUE METHODIST EPISCOPAL CHURCH, SOUTH, TULSA, OKLAHOMA

RUSH, ENDACOTT AND RUSH, ARCHITECTS; BRUCE GOFF, DESIGNER ADAH M. ROBINSON, ASSOCIATE

DECLARATION OF PURPOSE

"The Boston Avenue Methodist Episcopal Church, South, in Tulsa is the result of an effort to build an honest building. It had to evolve from a carefully studied plan devised to fill the needs of a large religious organization. Because the problem was solved with some degree of success it can be classed with a few other pioneering designs as Living Architecture. 'The man in the street' usually likes it, the 'trained' architects seldom do."

•

ELEMENTS IN THE PLAN

Site: At a turning point of Boston Avenue, bounded by streets on 3 sides.

Functions of the Building: Auditorium, educational plant, social center.

Disposition of Parts: The Tower, as dominant feature, is on an axis with Boston Avenue. Tower Entrance opens into Auditorium on right and Social Lobby on left.

•

AUDITORIUM

Capacity, with balcony, 1800.

Pulpit, as center of attraction, the focus for all features of the design; *Seating* in concentric circles, for convenience (the typical American arrangement, here expressed in plan); *Choir* flanks pulpit on two sides (choristers can be seen and their voices converge in center of auditorium with balanced distribution); *Organ console* directly behind pulpit controls 4 chambers and echo organ in ceiling. Acoustical correction provided. Sunlight through ceiling and through 11 exterior windows behind backs of audience. Electric lighting by indirect system from circular coves in ceiling.

SOCIAL CENTER

Lobby: A long, high corridor connecting the 3 entrances, serving principally as visiting center before and after services—a popular feature. Community Hall, beneath auditorium, is equipped with modern stage and supplied with kitchen for banquets. Gymnasium. Roof of porte cochere used for outdoor gatherings.

•

EDUCATIONAL PLANT

4 floors. Traffic circulation separate from that of other departments.

•

MATERIALS AND CONSTRUCTION

Steel frame of tower designed by A. Endacott. Top of copper and glass.

"Fins" (see page 526) calculated to reflect light. Steel casement windows. Exterior wall, Indiana limestone with polychrome terra cotta.

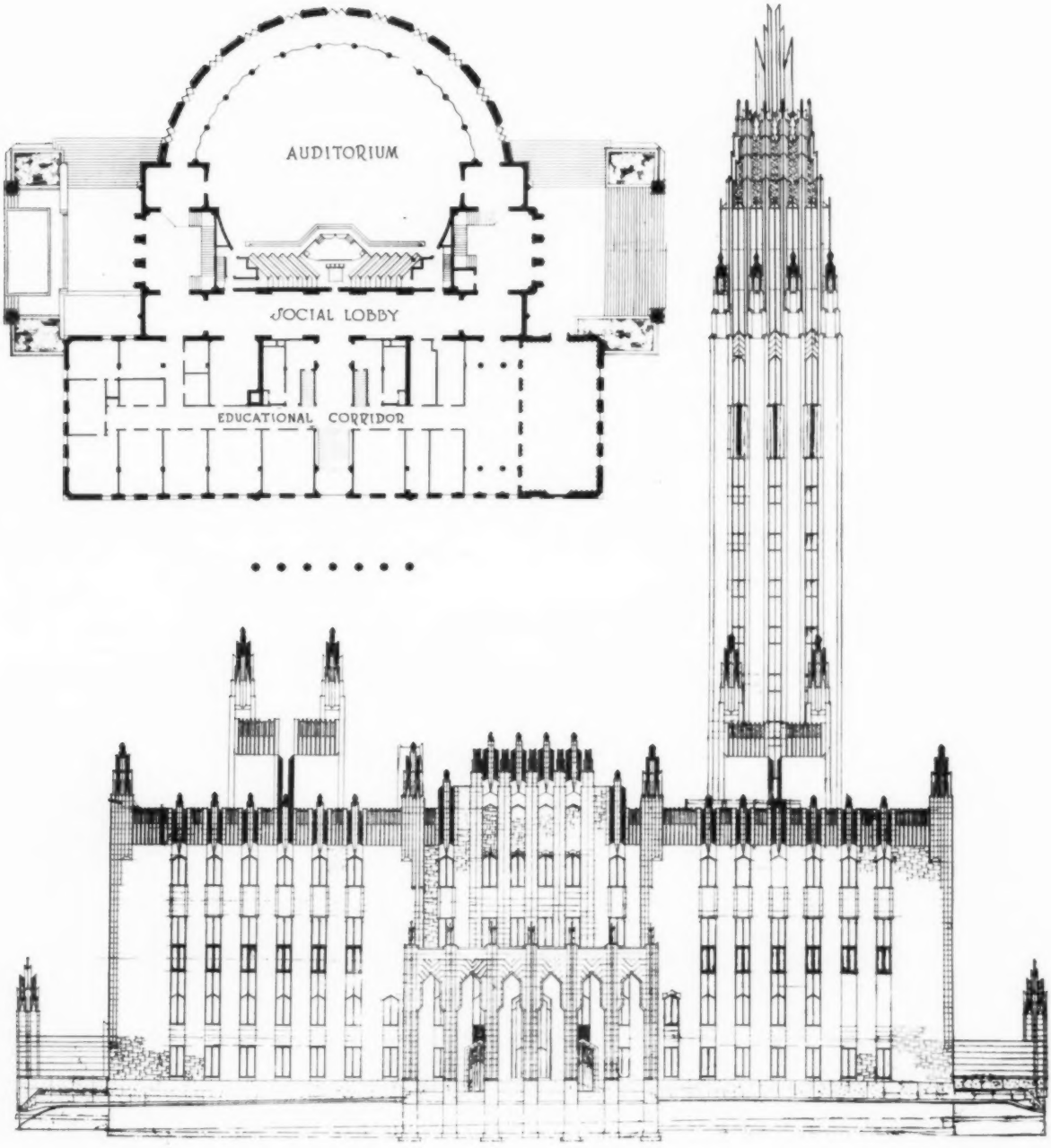
Sculpture by Robert Garrison.

The architects are not responsible for the interior treatment of the building.

•

PROMOTION

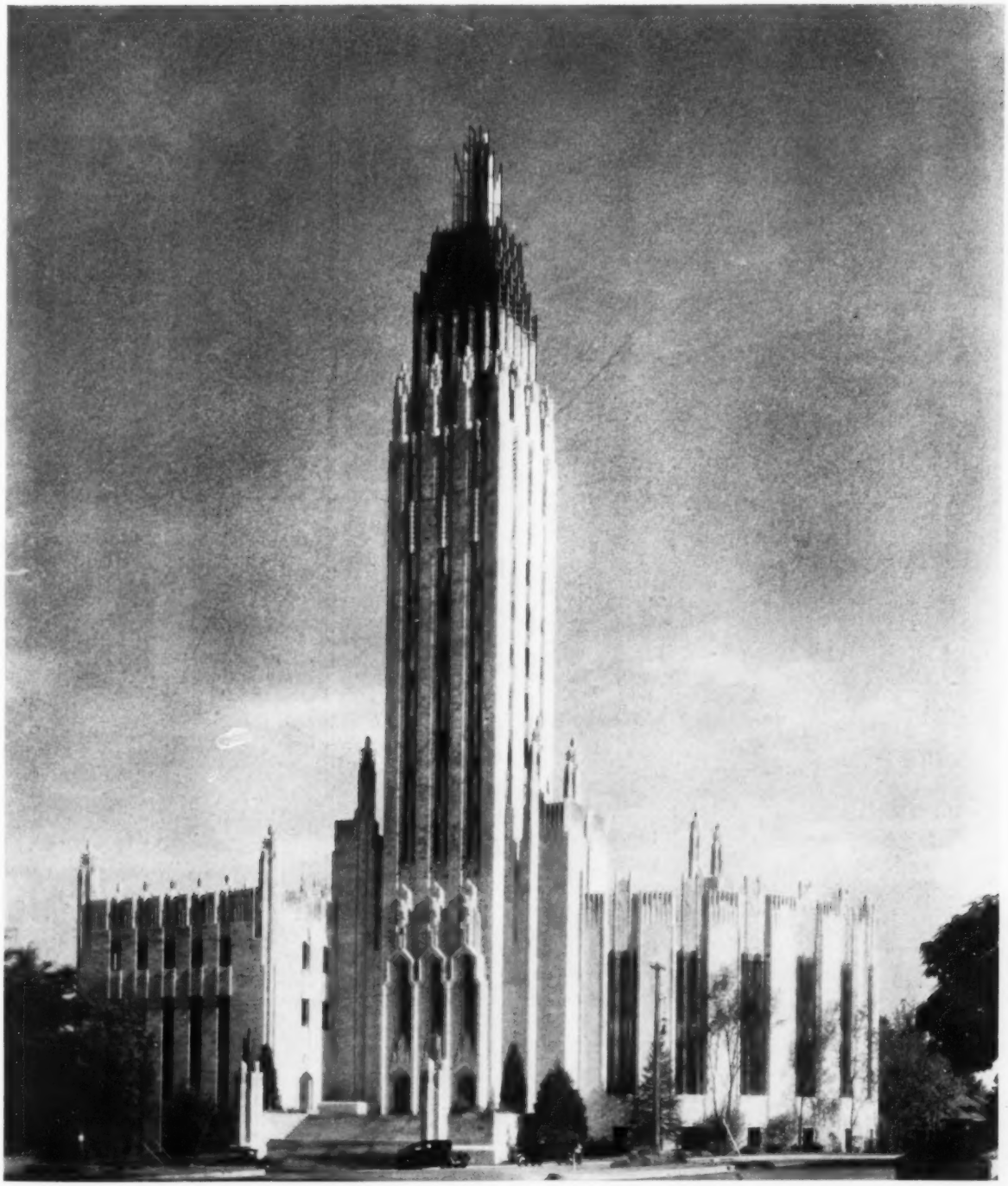
"From the very first this building pursued a perilous course. Everywhere we bumped into people who were afraid . . . church boards . . . architects . . . sidewalk makers, etc., . . . all afraid. Of what? The Idea, as Sullivan would say. How could we dare do such a thing? Fortunately we had in the building committee a group of men strong enough to 'know what they liked.' So the designs of the young architect Bruce Goff were accepted, after many trials and tribulations, and he and the architects E. A. Rush and A. Endacott started work."



EAST ELEVATION

THE BOSTON AVENUE METHODIST EPISCOPAL CHURCH, SOUTH, TULSA, OKLAHOMA

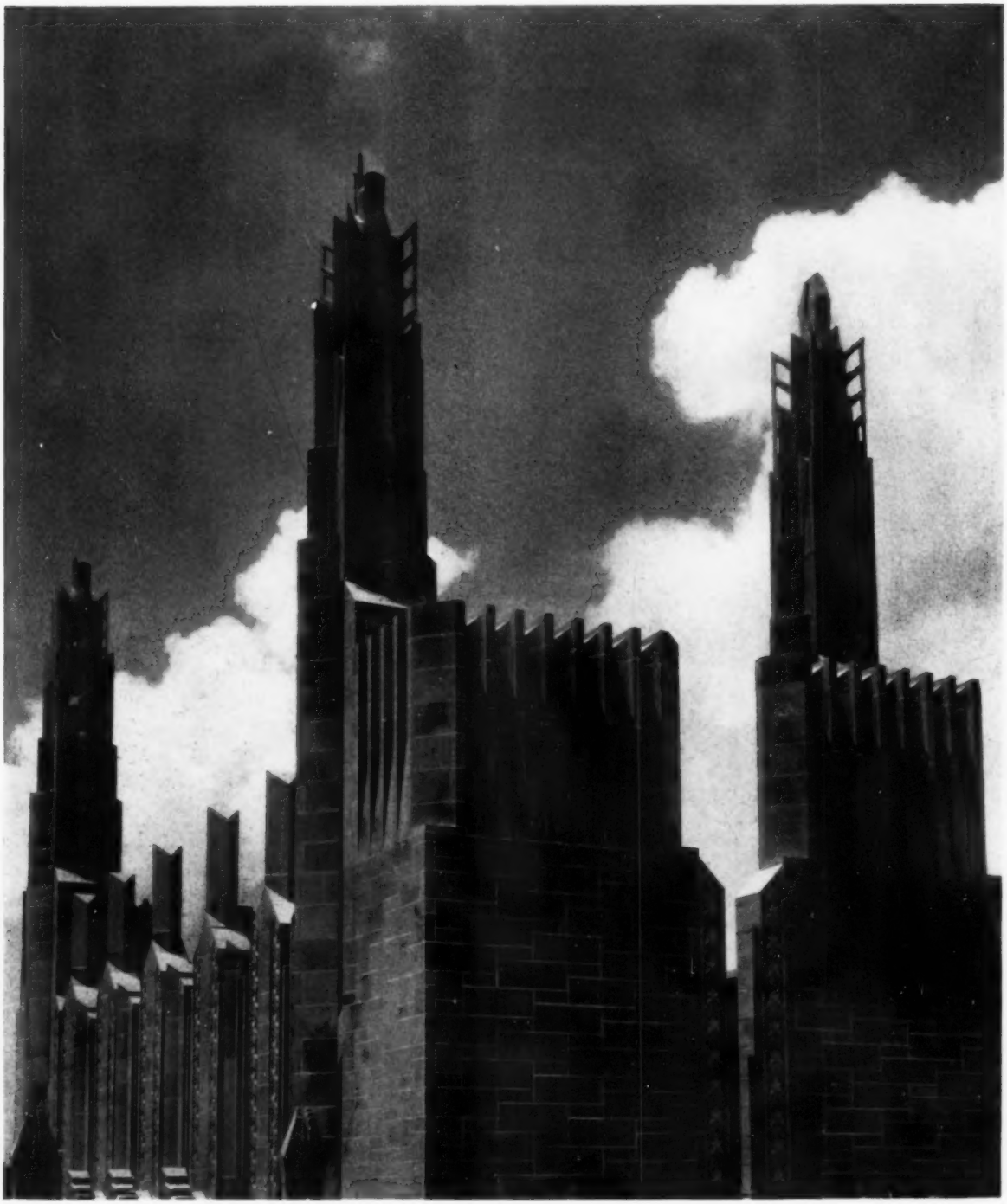
RUSH, ENDACOTT AND RUSH, ARCHITECTS. DESIGNED BY BRUCE GOFF



NORTH FACADE

THE BOSTON AVENUE METHODIST EPISCOPAL CHURCH, SOUTH, TULSA, OKLAHOMA

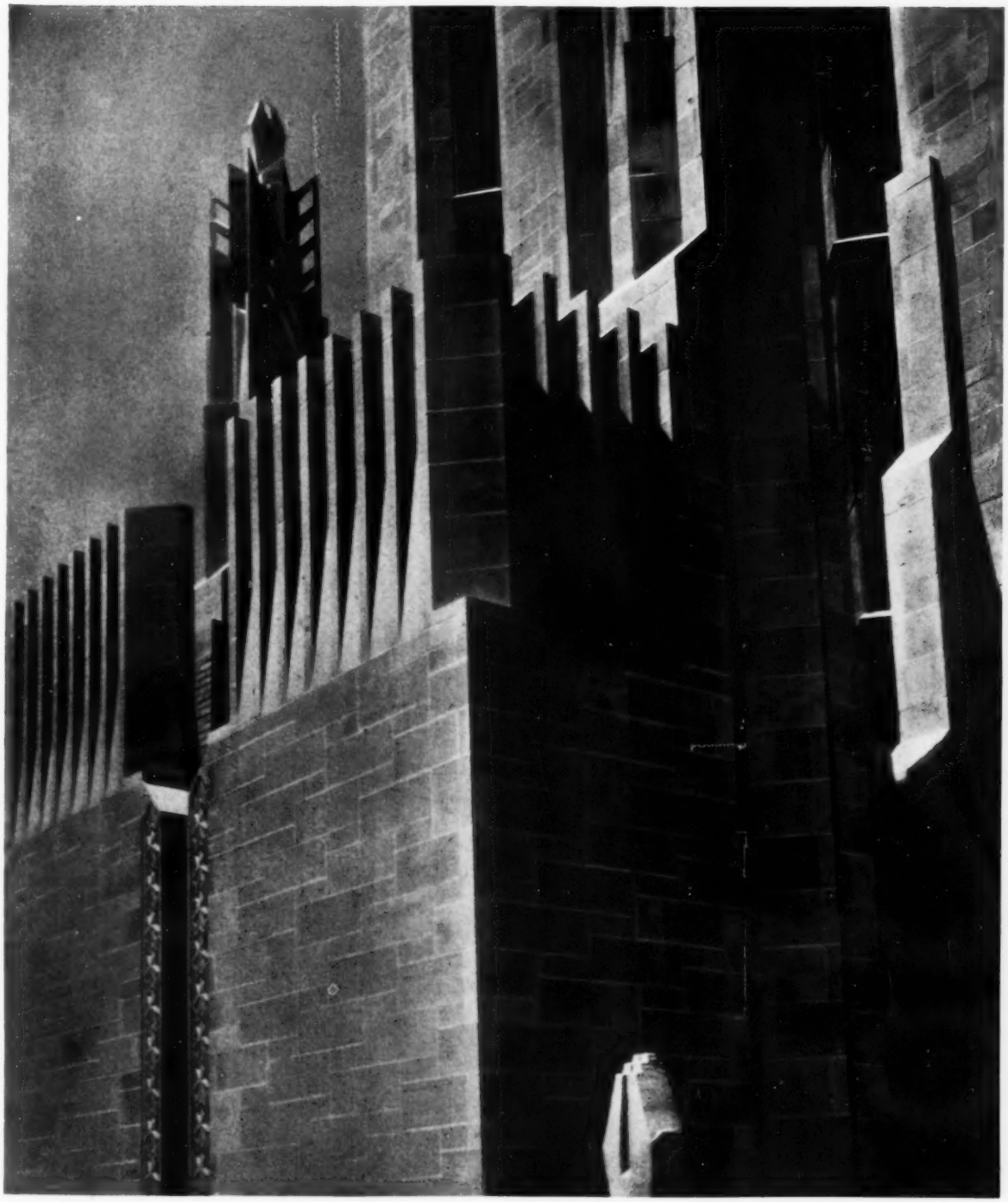
RUSH, ENDACOTT AND RUSH, ARCHITECTS. DESIGNED BY BRUCE GOFF



PARAPET DETAIL

THE BOSTON AVENUE METHODIST EPISCOPAL CHURCH, SOUTH, TULSA, OKLAHOMA

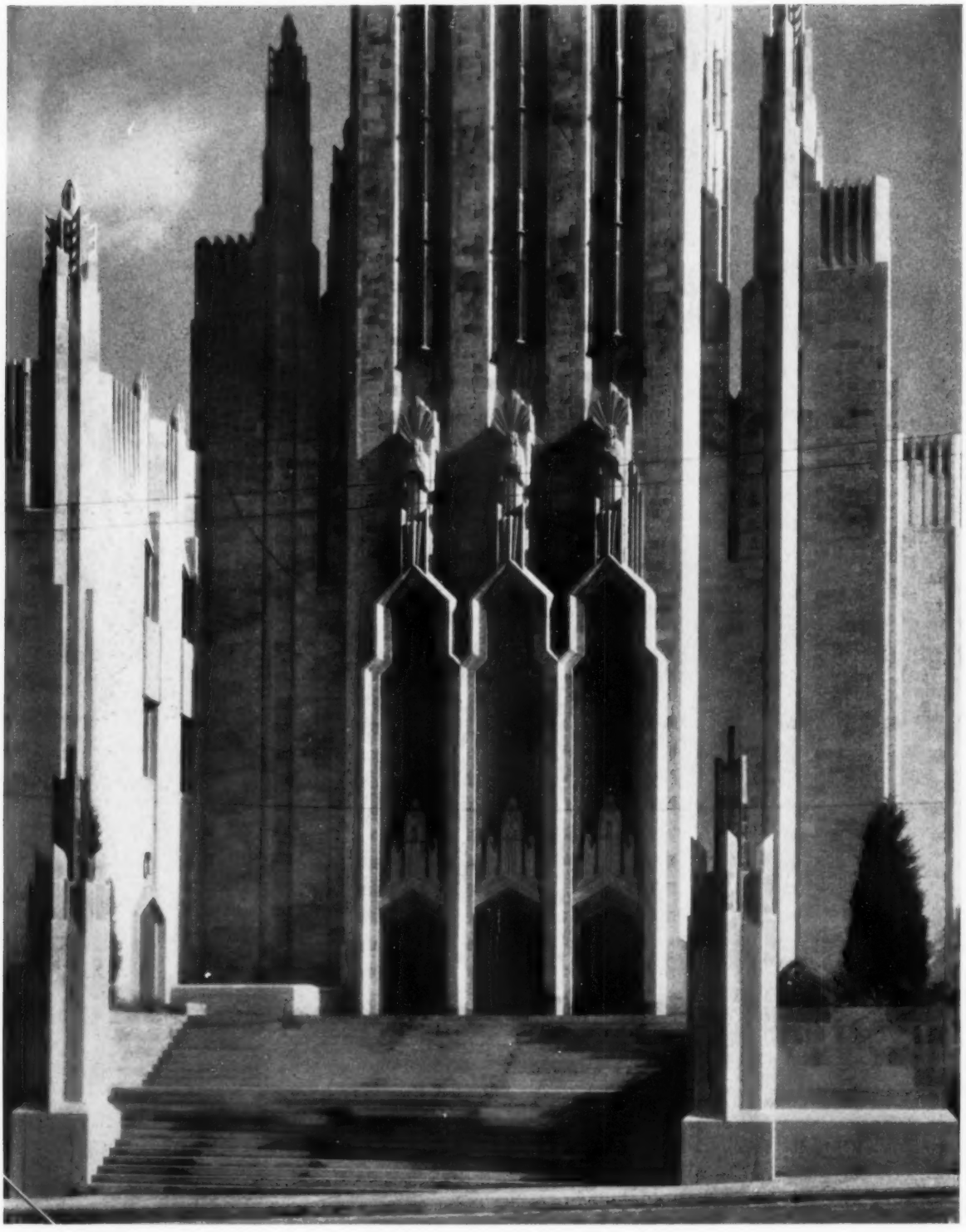
RUSH, ENDACOTT AND RUSH, ARCHITECTS. DESIGNED BY BRUCE GOFF



PARAPET DETAIL

THE BOSTON AVENUE METHODIST EPISCOPAL CHURCH, SOUTH, TULSA, OKLAHOMA

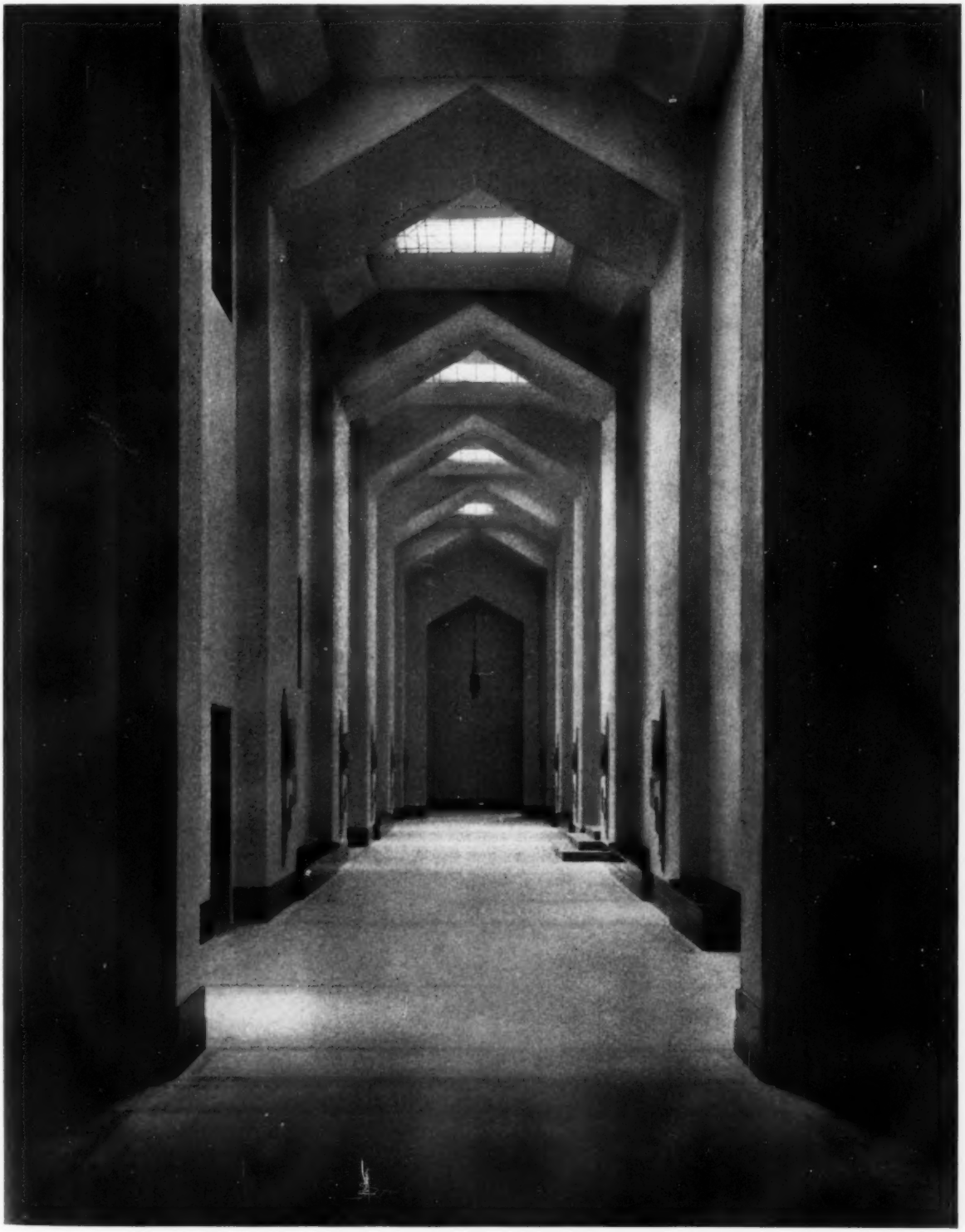
RUSH, ENDACOTT AND RUSH, ARCHITECTS. DESIGNED BY BRUCE GOFF



MAIN ENTRANCE

THE BOSTON AVENUE METHODIST EPISCOPAL CHURCH, SOUTH, TULSA, OKLAHOMA

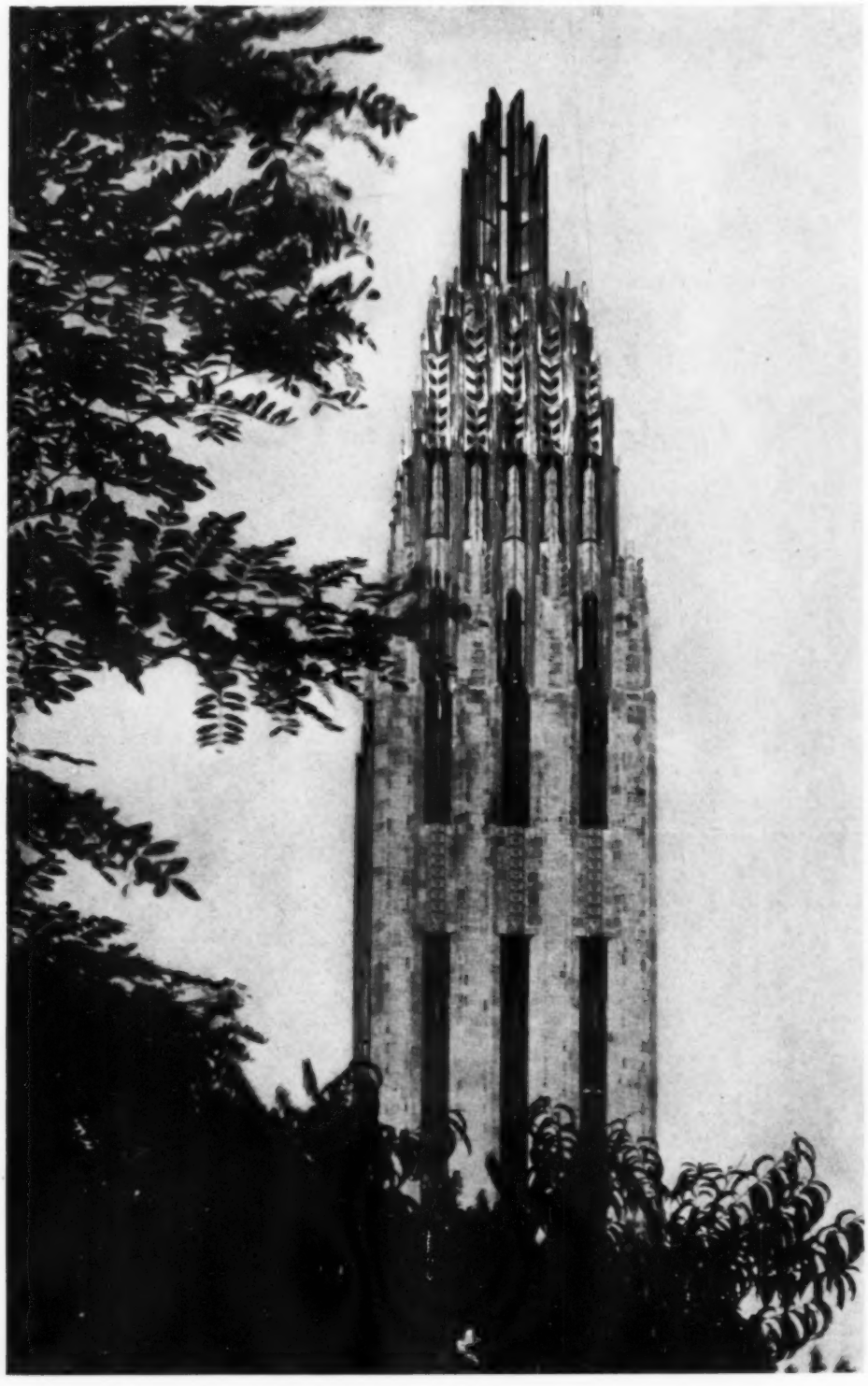
RUSH, ENDACOTT AND RUSH, ARCHITECTS. DESIGNED BY BRUCE GOFF



SOCIAL CORRIDOR

THE BOSTON AVENUE METHODIST EPISCOPAL CHURCH, SOUTH, TULSA, OKLAHOMA

RUSH, ENDACOTT AND RUSH, ARCHITECTS. DESIGNED BY BRUCE GOFF



TOWER DETAIL

THE BOSTON AVENUE METHODIST EPISCOPAL CHURCH, SOUTH, TULSA, OKLAHOMA

RUSH, ENDACOTT AND RUSH, ARCHITECTS. DESIGNED BY BRUCE GOFF

PORTFOLIO
OF
CURRENT ARCHITECTURE

Photo. Palmer Shannon

Lounge
Roerich Museum and Master Apartment Building, New York City
CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS

FEATURING
ROERICH MUSEUM AND MASTER APARTMENT BUILDING
STORE BUILDINGS
MEXICAN MINOR ARCHITECTURE
GERMAN BALCONIES

UNIV OF MICH.

Photo. Palmer Shannon

Roerich Museum and Master Apartment Building, New York City

CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS

Photo. Palmer Shannon

Entrance on Riverside Drive
Roerich Museum and Master Apartment Building, New York City
CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS

Photo. Palmer Shannon

Tower Detail
Roerich Museum and Master Apartment Building, New York City
CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS

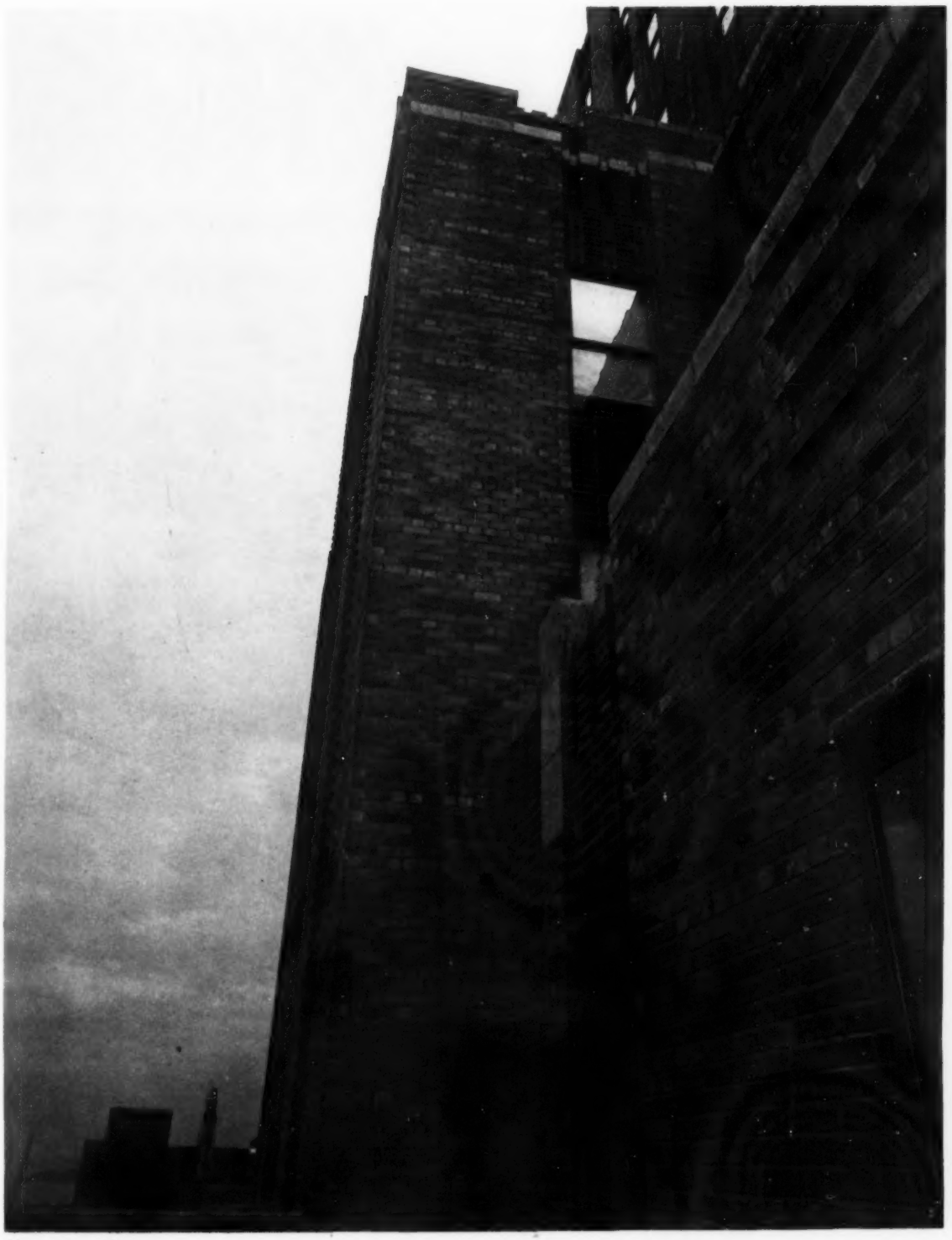


Photo. Palmer Shannon

Set-back
Roerich Museum and Master Apartment Building, New York City
CORBETT, HARRISON AND MACMURRAY; SUGARMAN AND BERGER, ASSOCIATED ARCHITECTS

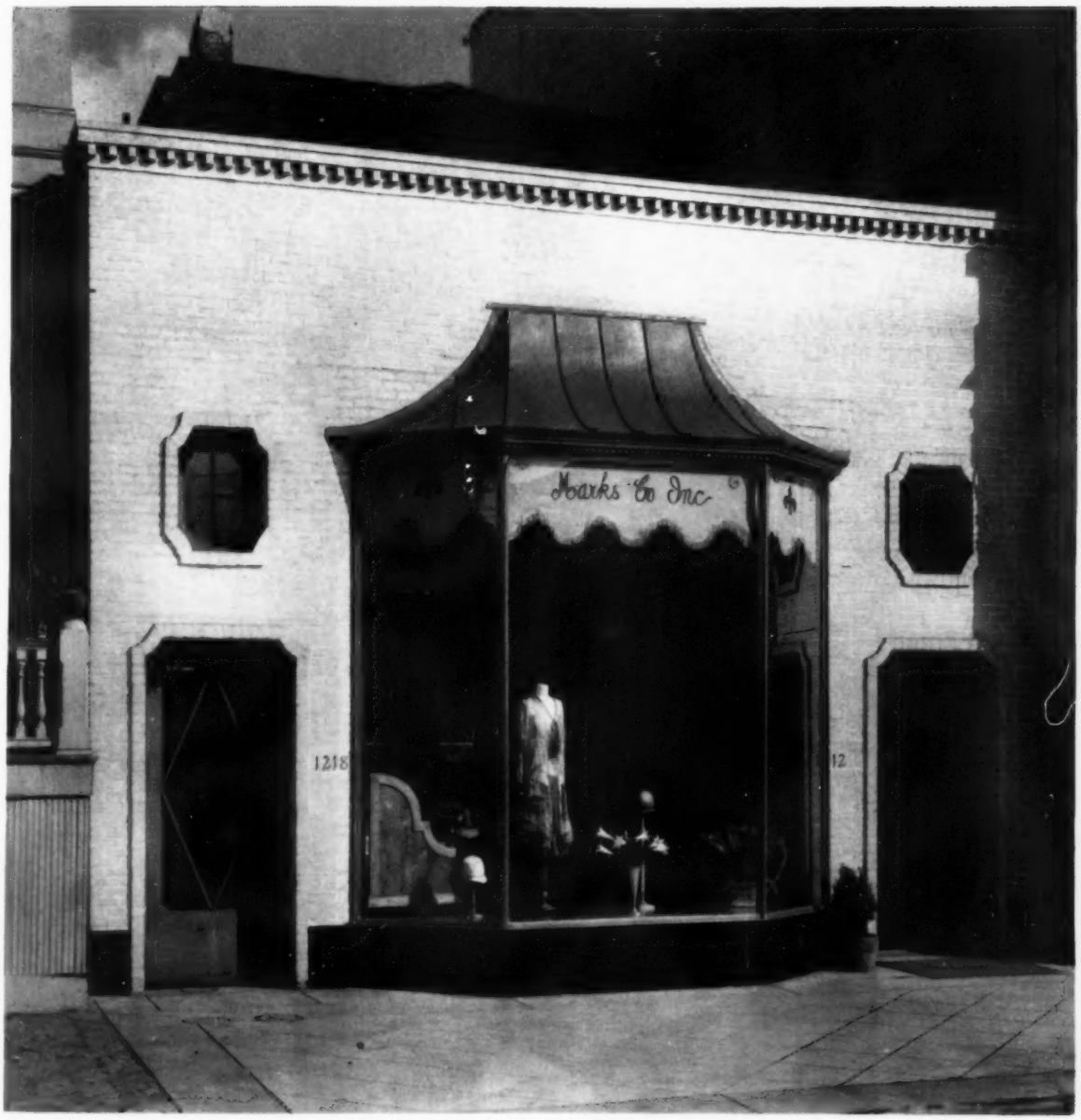
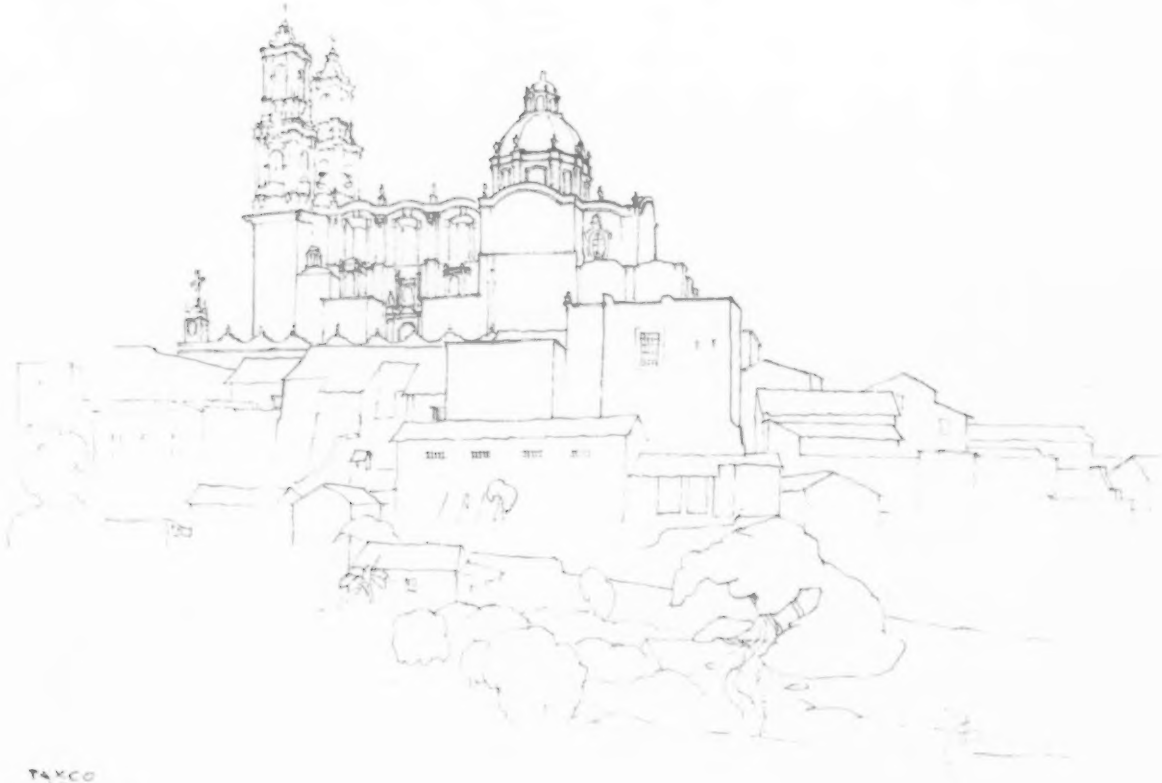


Photo. Tebbs and Knell

Marks Co. Store, New Orleans
M. H. GOLDSTEIN, ARCHITECT

Photo. Tebbs and Knell

Fred S. Jones & Co. Store, Birmingham, Alabama
MILLER AND MARTIN, ARCHITECTS

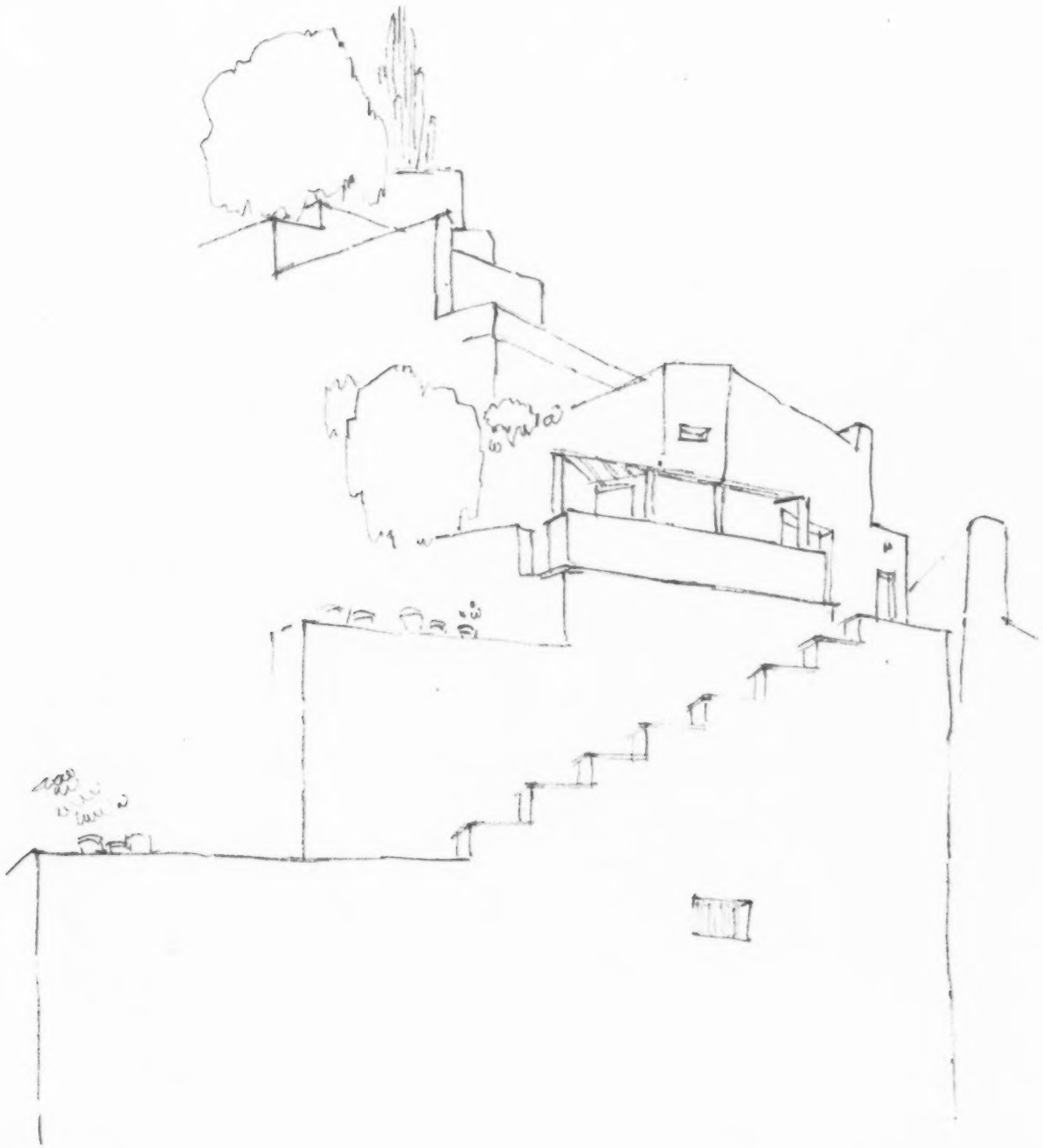


TAXCO

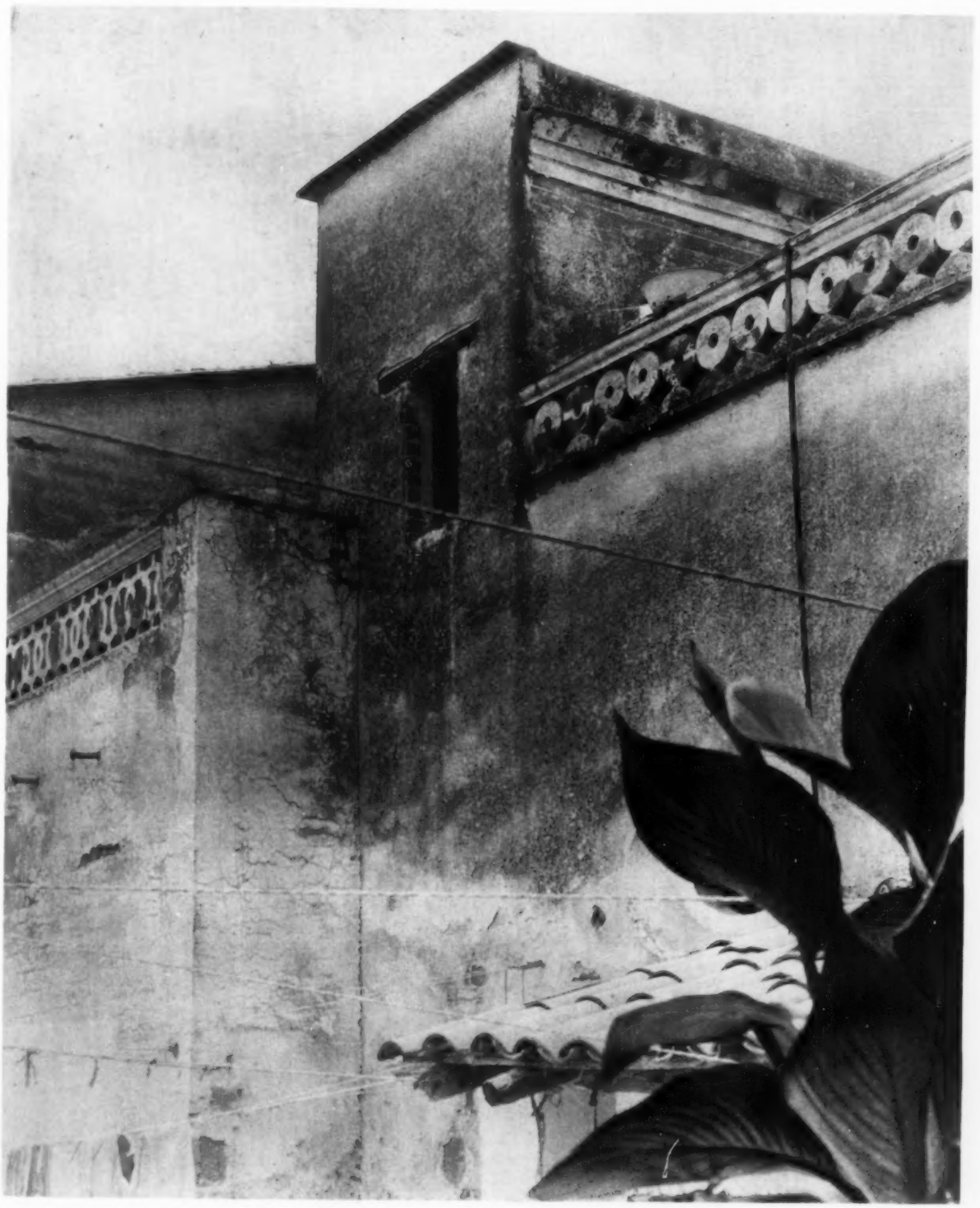
PORTFOLIO
OF
MEXICAN MINOR ARCHITECTURE

House at Puebla

PHOTOGRAPHS BY G. RICHARD GARRISON
DRAWINGS BY GEORGE W. RUSTAY



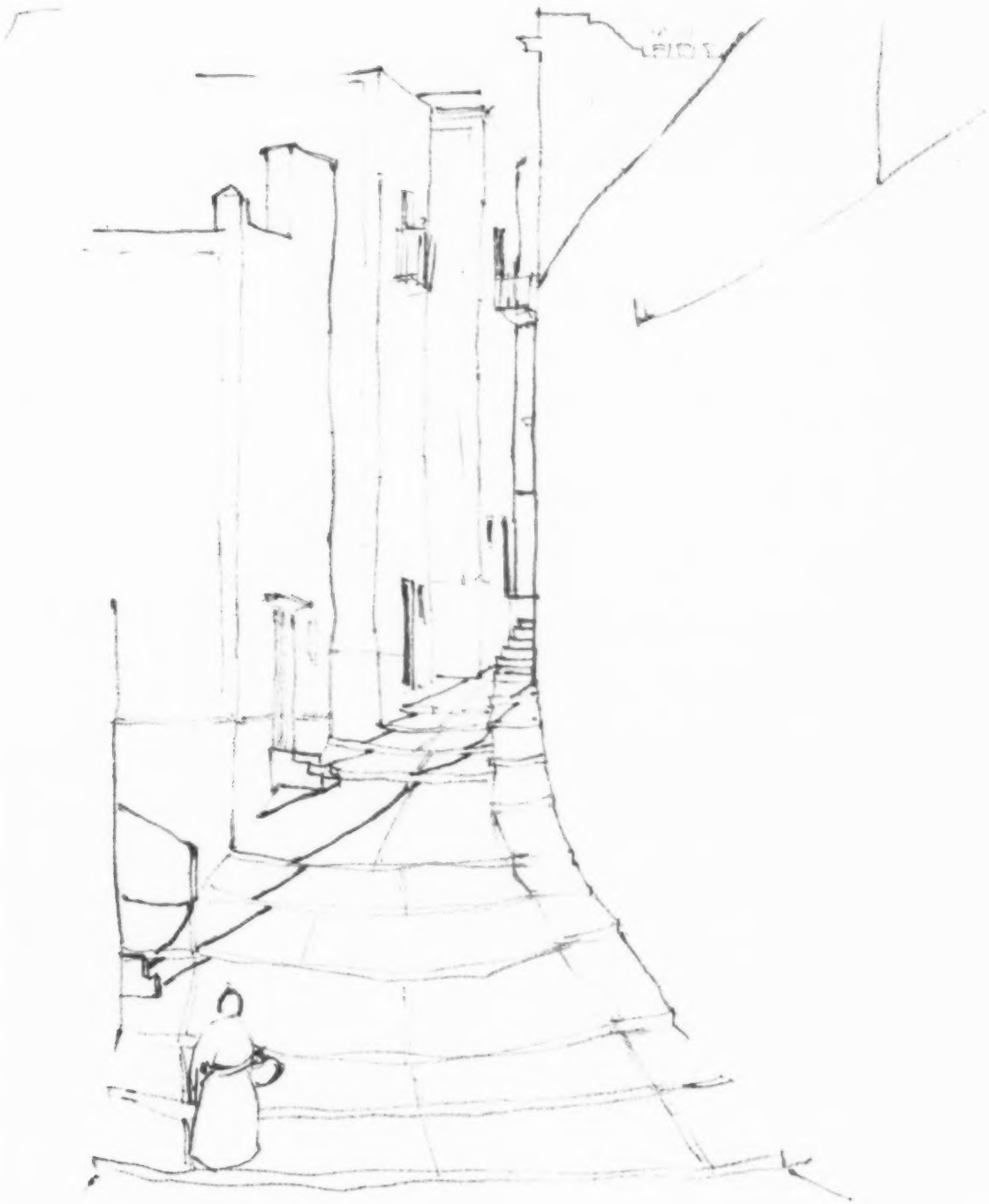
GUANAJUATO
1929
GEO. W. RUSTAY



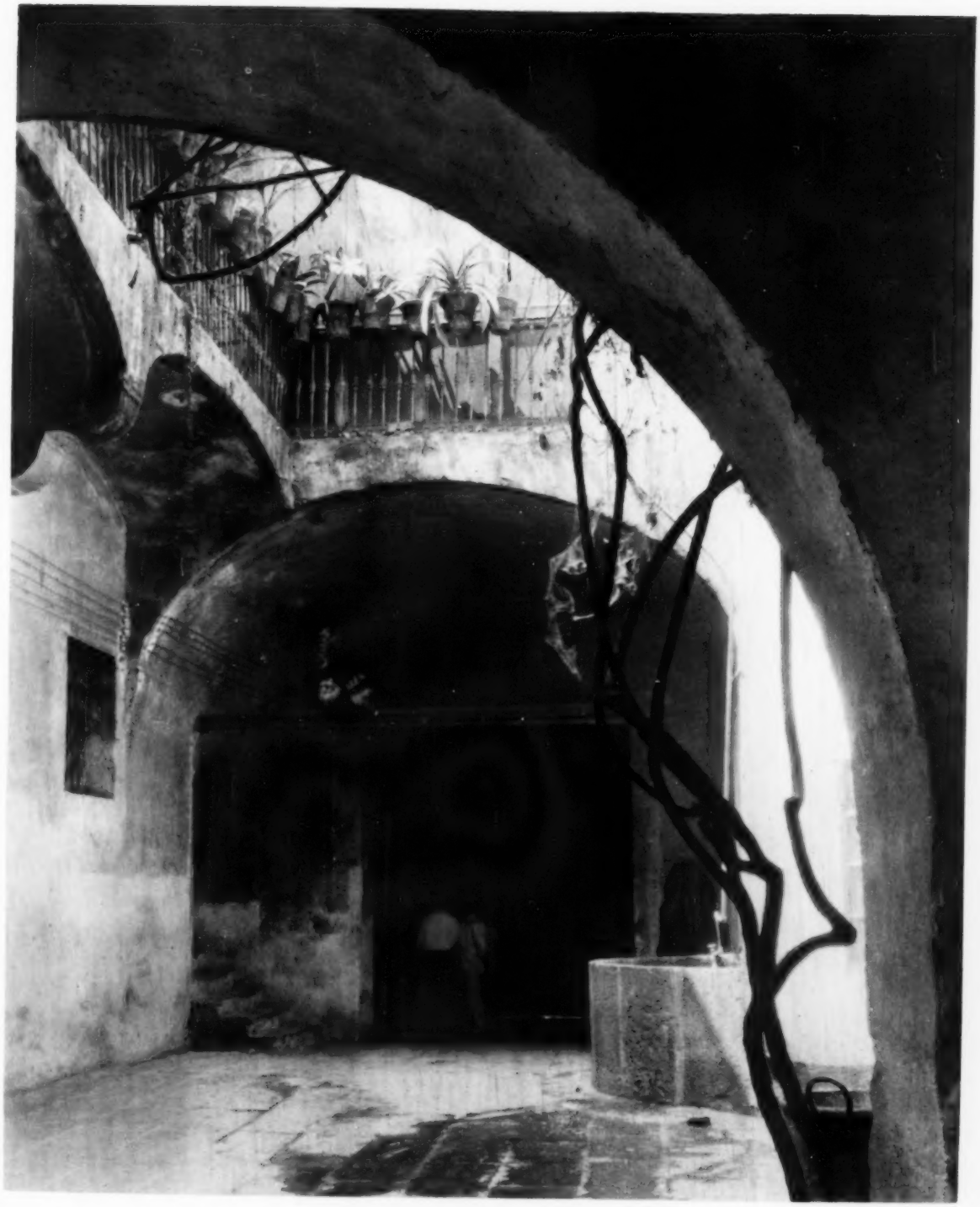
House at Cuernavaca

GUANAJUATO
1929
GEO. WITRUSTAY

House at Querétaro



GUANAJUATO.
1929
GW. RUSTAY.



House at Puebla

PORTFOLIO
OF
GERMAN BALCONIES

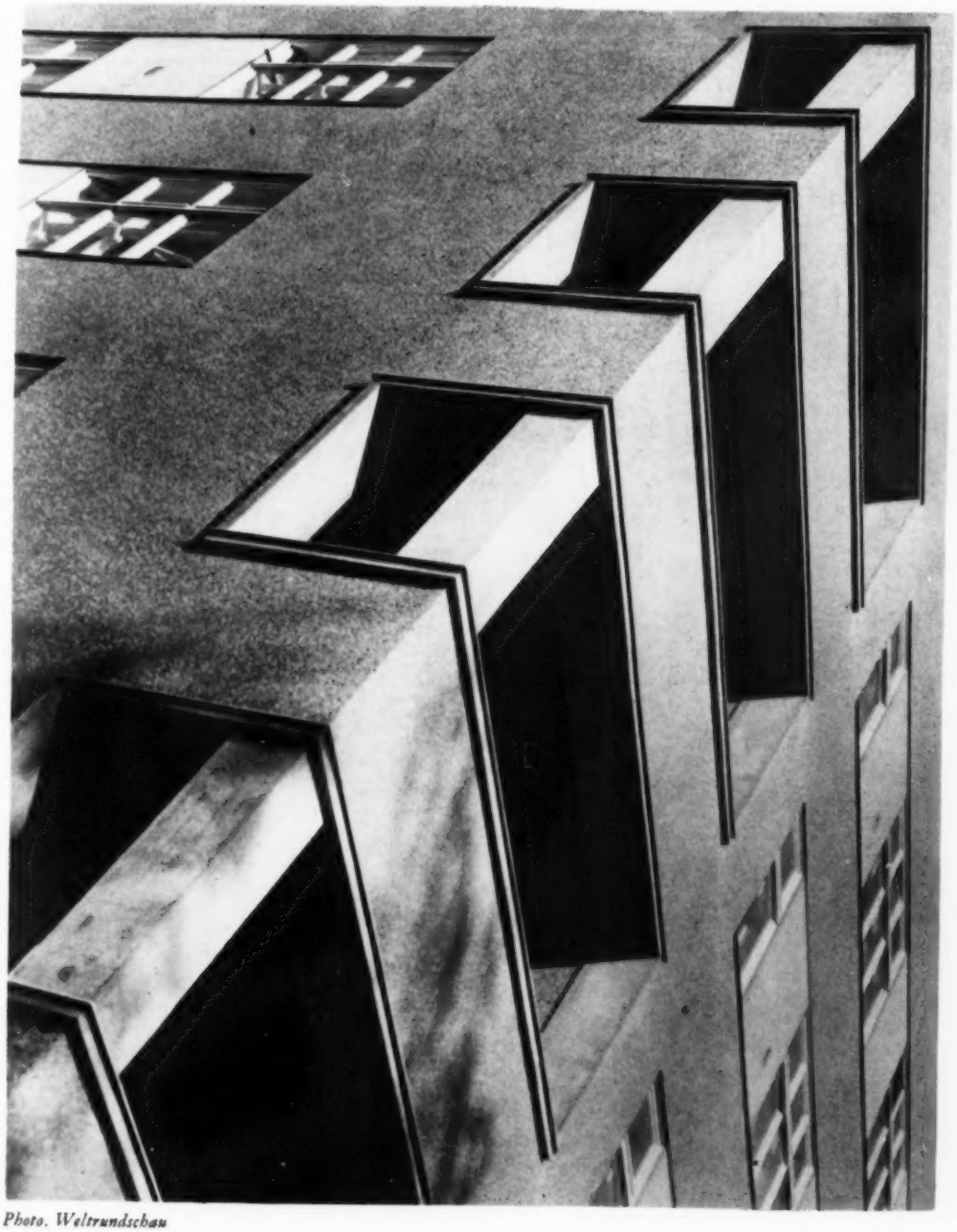


Photo. Weltrundschau

Balcony Detail, Berlin

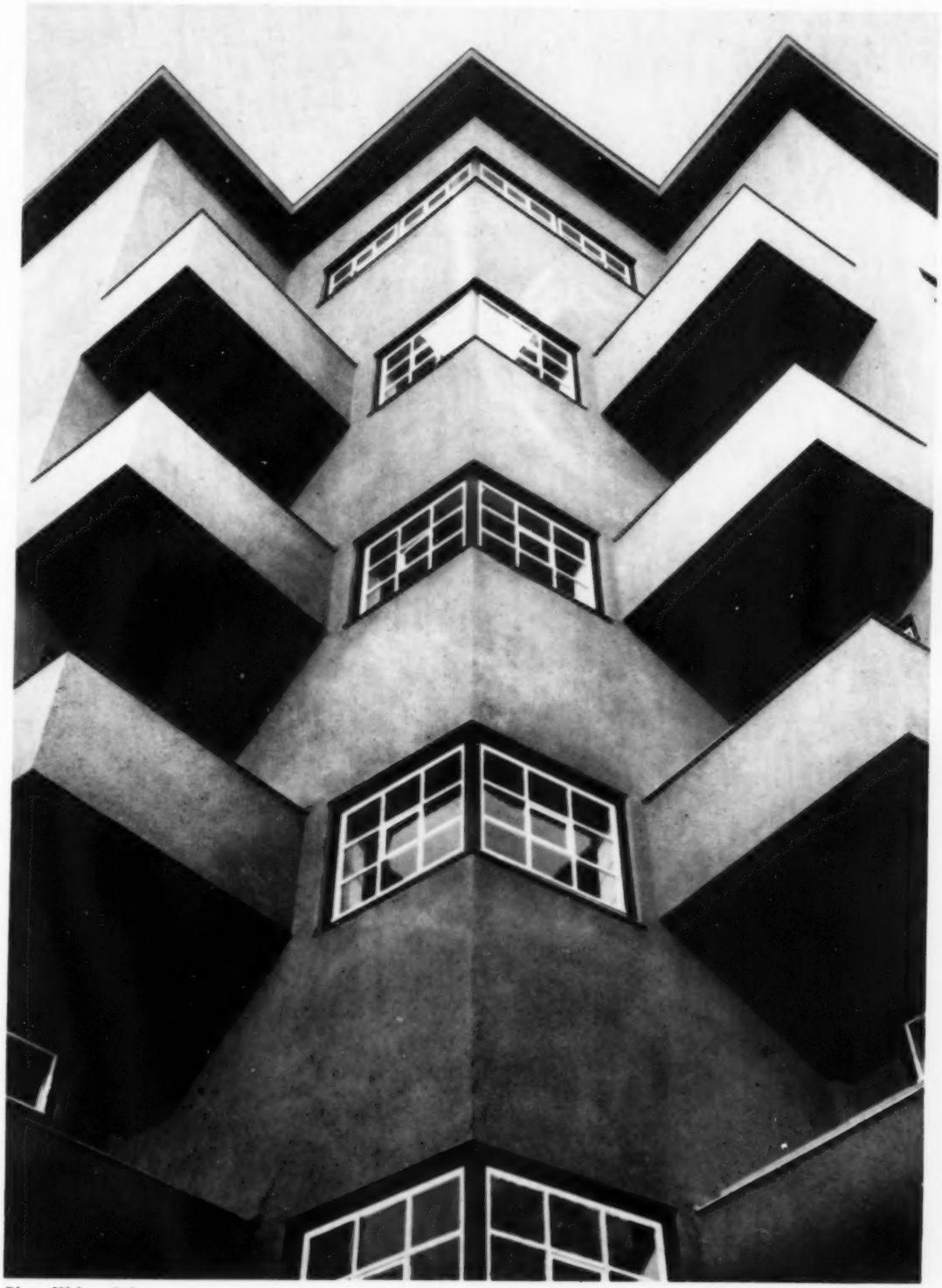


Photo. Weltrundschau

Apartment House, Berlin

Photo. Weltrundschau

Apartment House, Berlin

Photo. Weltrundschau

Apartment House, Berlin

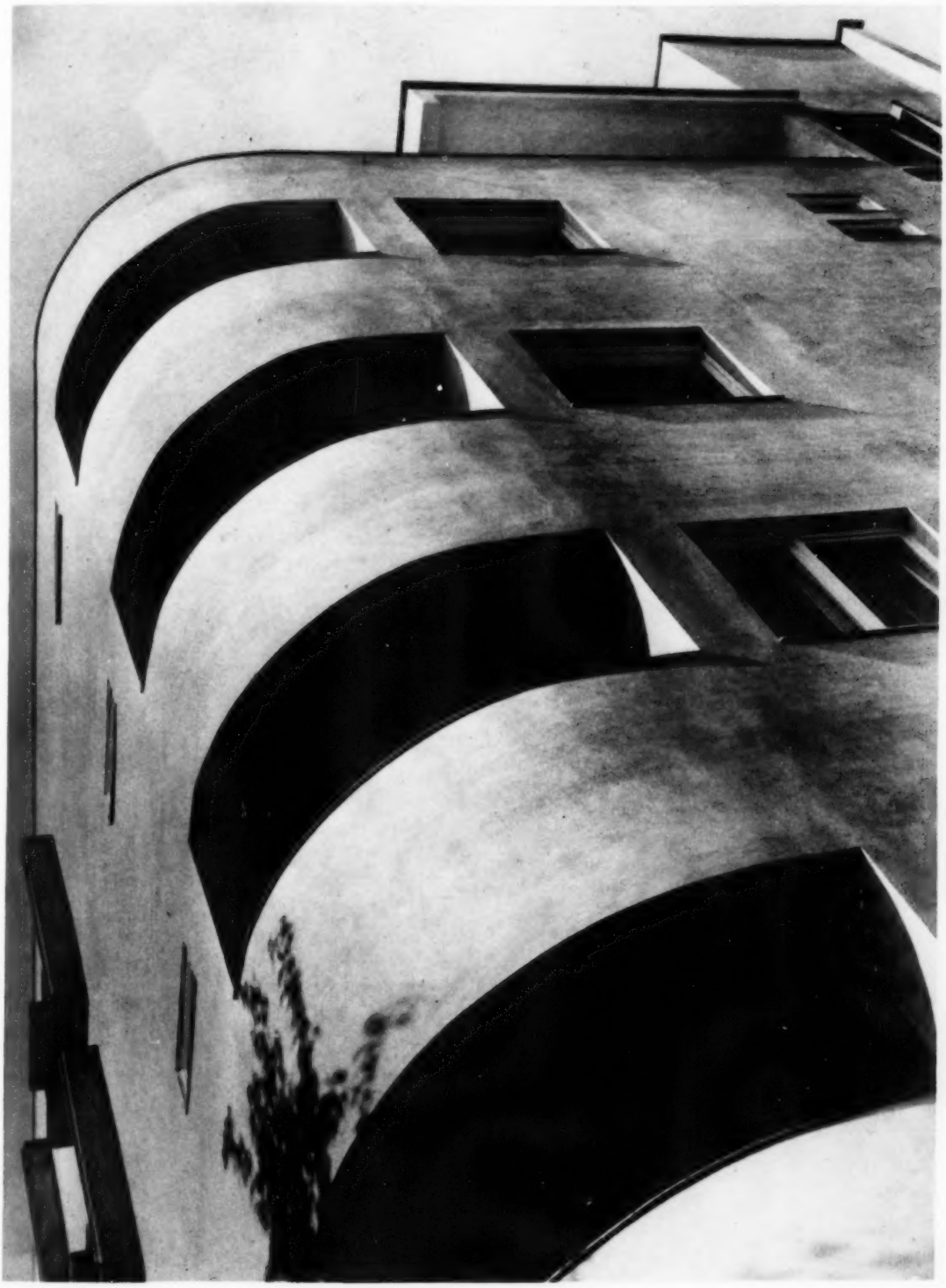


Photo. Weltrundschau

Angle of Apartment House, Berlin

THE MODERN MUSEUM OF ART

BY FISKE KIMBALL

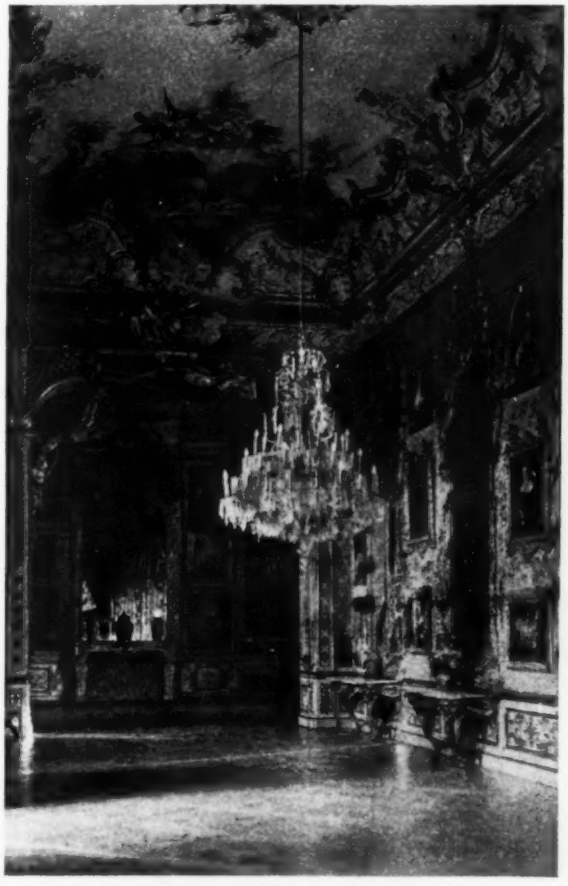
I. The Growth of the Modern Museum

The design of museums of art is undergoing radical modification, because the ideals and functions of the art museum itself have been transformed.

That the architectural problem, even on a large scale, is not a rare or esoteric one in the United States is evidenced by the rapid increase in numbers of important museums of art since 1900. Then people thought of few others besides those of New York, Boston, Chicago, Philadelphia, and Washington. Today we must also seriously reckon with the art museums of Worcester, Providence, Brooklyn, Buffalo, Pittsburgh, Baltimore, Cleveland, Cincinnati, Toledo, Detroit, Minneapolis, Saint Louis, Kansas City, San Francisco, Los Angeles, and other cities. It is a moment of the greatest activity in construction. Philadelphia, Detroit and Baltimore are completing great buildings entirely new; Boston, Chicago and Washington are opening new wings of a size equal to that of any museum in the United States a few years ago. In current architectural practice, the art museum is coming to occupy the place held by the public library a few years ago.

It is important that the new buildings shall incorporate the best and most advanced thought on museum practice. Too often in America we are prone to "discover" practices already tried and antiquated in Europe.

The royal and princely collections out of which grew the great national museums of Europe were primarily collections of sculpture and of paintings, antique and Renaissance, adorning the state apartments and living quarters of the palaces. With growing accumulations, one or more of these apartments took the form of elongated galleries specially devoted to paintings and statuary, but still with side light from ordinary windows, and with furniture and ornaments of the style of their time. Independent of these were the armouries and the *Schatzkammern* of coins, gems, jewelry, goldsmith work, crystal, ivories and other rarities of craftsmanship. Furniture, textiles, costumes, lace, rugs, pottery and other products of the crafts were as yet scarcely regarded except as household goods, and those of past ages, representing other tastes, were little valued.



THE PRINCELY TYPE:

An XVIII century palace gallery undisturbed.

The Green Gallery Residenz-Museum, Munich, François de Cuvilliés, architect. Paintings, furniture, minor objects, and decorative elements in combination, illuminated by side-light from ordinary windows.

GENESIS OF THE PUBLIC MUSEUM: A PROJECT OF THE MONUMENTAL TYPE

Study by Hubert Robert for the treatment of the Grande Gallerie du Louvre, 1786.

The early suggestion of skylights is especially notable. Paintings and sculpture are shown exhibited together, in an aesthetic grouping, within bays demarked by architectural members.

Author's collection

ESTABLISHMENT OF THE MONUMENTAL TYPE

The Grande Gallerie du Louvre as installed.

The opening of the Musée Napoleon, from the etching by Reinhold, 1811. The installation is essentially of paintings only, wholly covering the walls. The skylights proposed in 1796 have not been adopted, the lighting being by dormers penetrating the vault.

THE CONVENTIONAL TYPE AT ITS BEST

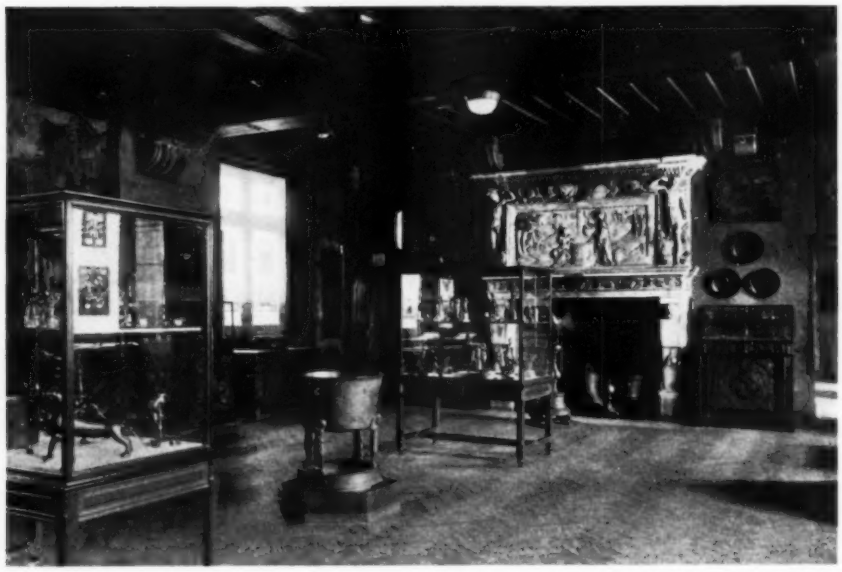
An early XIX century sculpture gallery, the Glyptothek, Munich, 1816-30, Leo von Klenze, architect.

The entire museum is devoted to classical sculpture. Side light from a single large and high lunette. Wall-background, imitation marble of blue green color. The rich but restrained decoration removes any suggestion of bareness.

The conventional, monumental museum. Although the suites of galleries and cabinets tended to become increasingly independent of the inhabited portions of the palace, as in the Uffizi and the Vatican, and were open to any genteel visitor on application, the decisive steps in the creation of the public museum were taken in the French Revolution, and it received its classic embodiment in the Musée Napoleon. The galleries, opened broadly to the public, were denuded of furniture and domestic accessories. Moreover, on the development of skylights in the early nineteenth century, top-lighting became almost universal for paintings and frequent for sculpture. Thus museum galleries became sharply distinguished from rooms of domestic character, however palatial. Sculpture and paintings were segregated in different departments, or even in separate museums—the Glyptothek and the Pinakothek in Munich, the British Museum and the National Gallery in London. The distribution of the individual works within the building was made with little regard to period and school. Paintings were fitted together to cover the walls like so many paving tiles. At best their arrangement was governed purely by decorative considerations, such as size and tone. With time, the number of works displayed became so great that the files of galleries, little distinguished in form, character, or contents, seemed endless. The *auguste ennui* of museums became proverbial.

Under the imposing authority of the oldest, most familiar, and most famous museums, the conventional type has survived with little modification in the design of many American museum buildings. The great plan of endless monumental galleries made by McKim, Mead and White about 1910, for the enlargement of the Metropolitan Museum (on which the northern and southern wings were erected), involves no recognition of any developments since the Musée Napoleon, and it by no means stands alone.

Romanticism in the Museum. From early in the nineteenth century, an independent movement was tending to bring more diversity of content and grouping. Romanticism drew into the field of interest the arts of the Middle Ages, hitherto neglected. In this new field the categories were not so sharply marked, and craft-objects jostled elbows with sculpture and paintings. The earlier of such collections were installed in



Courtesy of Charles R. Richards

THE EARLY ROMANTIC TYPE: CLUNY MUSEUM, PARIS, OPENED 1842

The room forms an original part of the antique building of the same general period as the objects displayed, the antique chimney piece being from another source. The installation treats the room not as a domestic ensemble, but as a gallery, with composite display of various classes of decorative objects, including considerable case installation.

Courtesy of Charles R. Richards

THE CRAFT-MUSEUM WITH TECHNICAL CLASSIFICATION

Gallery of English Stoneware, Victoria and Albert Museum, South Kensington, London.

Collections arranged systematically by material, with only a single general class of objects in one gallery. Though included in the display series, it is essentially a study collection. Sky-light, giving many reflections in case installation.

THE CULTURE-HISTORY MUSEUM: EARLY PERIOD ROOM INSTALLATION (1888)
Germanic National Museum, Nuremberg.
An antique room, Torolese, giving a background of the period to a composite installation of varied craft-objects arranged to suggest their original domestic character.

Courtesy of Charles R. Richards

old mediaeval buildings like the Hôtel de Cluny (opened to the public in 1844). Their varied interiors contrasted with the monotonous galleries in museums of conventional type and provided a sympathetic setting for objects of their own general period. As yet, however, there was little effort to combine the elements in their original relations, and the originally domestic or monastic character of the rooms was destroyed by the installation of museum cases.

The craft-museum: technical classification. At the moment when factory production first seriously threatened the old handicraft, there awoke an interest in its vanishing arts, and an appreciation that all that man's hand had produced was worthy of study and preservation. The South Kensington Museum (from 1852) was the first designed to display such craft-objects in Europe, the Pennsylvania Museum and School of Industrial Art (1876) the first in America. Paintings and sculpture were long excluded from these craft-museums. Under the scientific ideals of the time, their contents was classified according to materials and technique, with segregated departments of woodwork, metal work, textiles, pottery, glass, and so on. With the growth in quantity of material, acres of closely similar reiterated objects buried the finest works. Such museums became paradises for the special student, but vastly wearisome for the general public, condemned to seek there for the masterpieces of craftsmanship to be found nowhere else.

The culture-history museum: evolutionary order, composite display, period backgrounds. As the century advanced, historical interest broadened beyond the romantic interest in Gothic to include the northern Renaissance and other cultural periods, while science turned from systematic classification to the study of evolution and of environmental factors. With national consciousness and the desire to popularize museum displays, there came into being in Germany museums designed to cover the whole cultural history of the country, in which its art formed a most important element. In these the scheme of old rooms was taken up as a conscious suggestion of environment. In 1888 the German Museum in Nuremberg (itself housed in old monastic buildings) took the lead by installing a series of six original period rooms of the fifteenth to the seventeenth centuries, with appropriate furnishings, which permitted

composite installation of different types of craft objects. In its great building of 1894-1900 the Bavarian National Museum in Munich made the fullest exemplification of such a scheme, following the order of cultural and artistic evolution in Germany from Roman times into the nineteenth century. It includes a number of antique German rooms more or less complete, with others arranged from fragments or reproduced in the style of the time. They contain varied objects of their respective periods, including certain paintings. While the works exhibited in these (and in many other museums in northern Europe which followed their lead) gained much by being thus replaced in an environment and atmosphere of their own times, the dangers of this feature of the scheme of the museum have also become clearly evident. One was the temptation to be satisfied with simulation of old work rather than with actual antique examples. Another was the limitation placed on accessions and display by the fixed character of the settings.

The idea of the period background was but slowly taken up in American art museums. The Japanese court of the Boston Museum (1909), simulating or suggesting the oriental style, was perhaps the earliest example. In the Gardner Museum in Boston and the Barnard Cloisters in New York, both originating as private collections, a considerable use was made of antique architectural material, freely recombined. With the Metropolitan Museum's first notable admission of European decorative art, in the Hoentschl-Morgan collection of French objects of the Renaissance and Middle Ages, it employed, in the Morgan wing (1910) alcoves with fine old original panelling and furnishings of their period. From time to time it acquired certain entire rooms—such as its Swiss room, its Indian shrine, its Pompeian room, its Venetian baroque rooms—somewhat sporadically installed.

The great stimulus to entire room installation in this country, however, came from its American wing (1924). Here there was a series of thirteen antique rooms, with two reproduced rooms, three large galleries with details reproduced in the style of the time, and certain smaller galleries. In spite of the strict departmentalization of the museum, paintings, chiefly secured by loan, were included in the composite display. A courageous step in the achievement of the original aesthetic effect of the domestic rooms was taken by the exposing of many valuable craft-objects without vitrines—with a confidence in the public which has proved amply justified. Progress toward a more comprehensive series of backgrounds, embracing a wider range of period and

Courtesy of Charles R. Richards

TEMPTATIONS OF THE CULTURE-HISTORY MUSEUM: ANTIQUE FORMS SIMULATED IN MODERN EXECUTION

In this unit from the museum at Darmstadt, as in many units of the pioneer museums of the sort at Nuremberg and Munich (representing the ideas of 1890-1910), doorways and vaulting are reproductions "in the style of the time." Such reproduced backgrounds, deceptive to the ordinary visitor, are generally condemned in current art museum practice.

styles, has since been made elsewhere. At the Detroit Institute of Arts this extends throughout the display collections, including European, Asiatic and American art, but with only three of the units actually antique, the styles of the others being suggested in modern work. At the Museum of Fine Arts in Boston the new Wing of Decorative Arts of Europe and America, distinct from the older department of paintings, embraces an extensive series of antique rooms clearly distinguished from the simple modern galleries which alternate with them. In the new museum at Philadelphia the Pennsylvania Museum of Art has provided a series of antique architectural elements, forming part of the main circuit and extending over the whole history of art, which is unique among museums anywhere.

Evolutionary order and composite installation in art museum galleries. Two of the principles involved in the culture-history museums—division by periods, in evolutionary order, as the primary one; and composite installation of different types of objects of one period—meanwhile received a stimulus in the art museums through the example of Wilhelm Bode at Berlin. He inaugurated the scheme of composite gallery-display in a special exhibition of 1883, and later adopted the principle in permanent installation, showing together the paintings and sculpture of a single time and school, with a few characteristic furnishings and decorative objects of the same period. In the Kaiser Friedrich Museum (1899-1904), he gave this system a brilliant and striking embodiment on a large scale, dividing the museum, not into departments of painting, sculpture, and the decorative arts, but into sections based on geographical and chronological development. An evolutionary order within single departments has now become almost universal; even the painting galleries of the Louvre have been rearranged since the war more strictly by periods and schools. Although composite display has found constantly increasing favor, the vested interests of the old, segregated departments, especially that of paintings, have hitherto prevented more than a sporadic adoption of it in such older American museums as the Metropolitan and the Boston Museum of Fine Arts. At Detroit and Philadelphia a primary division by periods has permitted its full and consistent employment.

Selection: display and study collections. In the old museums it had not been uncommon to display a few of the very choicest works, whatever their style, in a single gallery, as in the *Tribuna* of the Uffizi, the *Salon carrée* of the Louvre. The rearrangement of the paintings to distribute the masterpieces by schools among the whole vast body was far from an unmixed blessing for the ordinary visitor. As, since the initiative of Bode the hanging was now much less crowded, to give each work a reasonable isolation on the wall, the space required for the whole collection became still greater, the circuits even longer.

A reaction, beginning in the museums of science, was meanwhile under way, which furnished a mean between these extremes of concentration and dispersion. Louis Agassiz (d. 1873) first proposed that museum contents should be divided into two series: an adequately representative display collection of selected works for the general public; and a study collection with the great body of material interesting rather to the specialist, where he could be undisturbed. This scheme was systematically adopted in the Museum of Natural History in London (1881-1886). Among the culture-history museums it also found a notable embodiment in the National Museum of Munich, with the added advantage of a cross classification, the display series on the main floor being in evolutionary order, the study series on the floor above in systematic order. Although the idea of study series was familiar in the art-museum literature of Germany in the 'nineties, no art museum undertook to apply it on a large scale before the re-

building of the Museum of Fine Arts in Boston (1907-1909). Here the proposal, but partially carried out, was merely to make a division by quality in each department, placing the finest works on the upper floor and relegating the others to the lower. At Philadelphia the division is now being made throughout, and the dual classification, as at Munich, but with a sharp division between the methods of installation employed in the display collection and that in the study collections, is being undertaken for the first time in a general museum of art.

Temporary exhibitions. Traditionally, the great museums concerned themselves only with the display of their permanent collections, without undertaking special or temporary exhibitions. Even the current Salon, held in the Louvre since 1673 (long before there was a Musée du Louvre) had to seek other quarters after 1848, owing to the inconvenience of disturbing the permanent installation each year to hang it. Thus it was an innovation when Bode in 1883 undertook his first great loan-exhibition of old masters from the private collections of Berlin. Since then temporary exhibitions of various sorts became steadily more important in the activity of progressive museums, even in great centers where the permament collections were rich and where exhibition facilities were possessed by other agencies. They drew repeatedly to the Museum a serious clientèle. Too often, however, they received no proper consideration in the plan of buildings, being provided for by clearing main galleries, or by the allotment of a gallery distant from the entrance.

Educational work. A recent development of far-reaching importance has been the provision of facilities for active interpretation of museum collections by the spoken word, in organized "educational work." Beginning with guidance of small groups through the galleries (now the least part of such work), it has progressed to a multitude of formal lectures before large audiences, to prolonged courses for smaller and more serious classes, and to round-table discussions of well-qualified professional workers, all often followed by gallery visits. Cooperation with the public and private schools, universities and colleges, shops and factories is cultivated, with students coming to the museum and material being sent by the museum to them. It has necessarily involved certain physical provisions in the building; not only a large auditorium, but a number of classrooms and rooms for the lending-collections. Among the art museums the work has been most highly developed at the Metropolitan Museum in New York, the housing arrangements there being gradually improvised as needs arose. In consequence, they scarcely form a coherent, organized unit of the building. Only outside the list of art museums, in the new school-service wing of the American Museum of Natural History, is such a highly developed unit yet to be found in operation.

II. Elements of the Modern Programme

The programme of requirements for a great modern museum involves recognition of all the significant contributions chronicled above. The major elements to be housed are: display collections, study collections, special exhibitions, educational facilities, administrative provisions, and mechanical plant.

In *the display collection*, intended for the large public—for the ordinary visitor, whether enlightened or unenlightened—there should be sharp limitation in the quantity of objects displayed, and rigorous selection for quality. The assignment of the galleries should follow some natural and obvious sequence, the most natural being the historical order of evolution. With the successive supremacies of different regions this may also be roughly a geographic order. There may well be two main divisions: of Eastern art (with sections for Egypt, Mesopotamia, Persia, India, China and

Courtesy of Metropolitan Museum of Art

DISPLAY COLLECTIONS: A LARGE GALLERY WITH COMPOSITE INSTALLATION
Metropolitan Museum of Art.

Tapestries, sculpture, wood-carving and other craft objects including case installation but excluding paintings. Simple architectural treatment without marked period character. Natural clerestory lighting. Exposed artificial lighting fixtures, obviously modern.

Japan); and of Western art (with sections for Greece, Rome, the Middle Ages, the Renaissance in various countries—as Italy, the Hapsburg possessions, France, England and America). To avoid the fatigue of monotony, contrast and variety should be sought in every way—in the size and shape of the spaces, the treatment and color of the walls, the types of flooring, the installation itself. For this reason if no other a composite display of various classes of objects—paintings, furniture, works of sculpture and the crafts, discreetly mingled—may be preferred. In each section both galleries and authentic period rooms may be included, systematically related: rooms to give the ensemble of the style with background and atmosphere, galleries to give freedom and elasticity. It is obvious that the galleries must provide, among other works, for those fine objects of the display collection which do not fit in the fixed settings of domestic rooms or other antique units, objects such as monumental sculpture, exterior iron work, paintings and tapestries of exceptional size, and objects requiring case installation.

Even with the composite scheme of installation, different types of material will predominate in the galleries of sections devoted to different civilizations and periods, according to their production and preservation. Thus in the classical section sculpture will dominate; whereas it may be wholly absent from the section for Dutch and British art of the seventeenth and eighteenth centuries. Painting will tend to dominate all European art since the Renaissance,

Courtesy of Pennsylvania Museum of Art

DISPLAY COLLECTIONS: A SMALL GALLERY WITH COMPOSITE INSTALLATION

Detroit Institute of Arts.

Paul Philippe Cret; Zantzinger, Borie and Medary, Associated Architects.

Paintings, sculpture, furniture, and craft objects, including case-installation. Natural side light from large windows; visible modern artificial lighting fixtures. Wall covering of colored velvet. The use of period forms in the ceiling and its decoration is restrained. "Altar," railings and gallery bench are modern. Their period forms may lead the visitor to confuse them with antique exhibits, such as the table.

Courtesy of Detroit Institute of Arts

Above: DISPLAY COLLECTIONS: A GALLERY WITH COMPOSITE INSTALLATION

Philadelphia Museum of Art.

Early American paintings and furniture, with craft objects displayed on tables. Simple architectural treatment avoiding marked period character. Wall covering of colored velvet. Artificial lighting from clerestory.

Courtesy of Detroit Institute of Arts

MAIN HALL, DETROIT INSTITUTE OF ARTS

Paul Philippe Cret; Zantzinger, Borie and Medary, Associated Architects.

Plain walls furnishing an admirable background for tapestries and sculpture.

Courtesy of Pennsylvania Museum of Art

Above: DISPLAY COLLECTIONS: A SCULPTURE GALLERY

Philadelphia Museum of Art, Philadelphia.
Horace Trumbauer, C. L. Borie, C. C. Zantzinger, Associate Architects.

Wall membering by niches designed for sculptured figures, with busts between. Artificial, chiefly indirect lighting, from concealed source above cornice.

Courtesy of Baltimore Museum of Art

MAIN HALL, BALTIMORE MUSEUM OF ART

John Russell Pope, Architect.

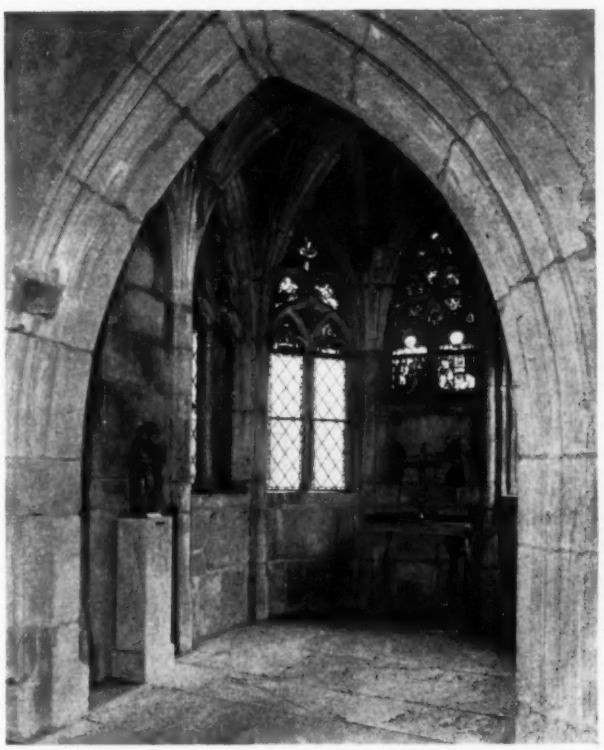
The colonnade with narrow aisle leaves little opportunity for the effective display of objects other than sculpture.

Courtesy of Metropolitan Museum of Art

Above: DISPLAY COLLECTIONS: ANTIQUE ROOM WITH COMPOSITE INSTALLATION

An American Georgian room—later XVIII century. The Metropolitan Museum of Art.

Paintings and furniture with other craft objects in vitrines on tables. Natural side light only: no artificial lighting. The antique chandeliers are exhibits.



DISPLAY COLLECTIONS: ANTIQUE ROOM WITH COMPOSITE INSTALLATION

A French Gothic Chapel, XV century. Detroit Institute of Arts.

Stained glass, sculpture, and devotional objects of the period. Natural lighting through windows; artificial lighting from exposed fixture of period form but modern execution.

Courtesy of Detroit Institute of Arts

Courtesy of Pennsylvania Museum of Art

DISPLAY COLLECTIONS: ANTIQUE ROOM WITH COMPOSITE INSTALLATION

An English Georgian room, XVIII century, Philadelphia Museum of Art, Horace Trumbauer, C. L. Borie, C. C. Zantzinger, Associate Architects.

Paintings, furniture and decorative accessories of the period. Natural side light; or artificial side light through double wall, supplemented by concealed projectors around dropped ceiling.

whereas in Mohammedan art it may be represented only by Persian miniatures. These differences will suggest variations in the form and scale of the galleries, with smooth walls where paintings or tapestries are preponderant, but with the possibility of niches or other schemes of wall-membering where sculpture in the round is the primary content. Such membering, to be sure, should be but sparingly used in the European and American sections, because of the rarity and cost of fine original works of sculpture. The shallow colonnade so frequently employed by architects in monumental foyers is adapted to little else, so that plain walls handled with dignity are there greatly to be preferred.

The treatment of display galleries today shows a reaction against the tendency of the late nineteenth century to reduce them to ascetic neutrality. The effort not to distract attention from the works of art produced a bareness felt even in the single gallery, still more in the monotony of a series of them. A decent richness in ceiling treatment, glow and color in wall coverings need not be banned. The century-old words of Leo von Klenze, whose sculpture galleries at Munich are models in this regard once more admired, deserve repetition:

"For collections of this kind, people have often followed the entirely false system by which, through gray and colorless backgrounds and few or no ornaments, they have sought to spare and heighten the antiques themselves. Nothing is more contradicted by the result. A well-calculated richness of the surroundings charms

Courtesy of Museum of Fine Arts

DISPLAY COLLECTIONS: ANTIQUE ROOM WITH COMPOSITE DISPLAY

An American room in the Adam style—early XIX century, Museum of Fine Arts, Boston.

Paintings, textiles, furniture and craft objects (with and without vitrines) in a domestic arrangement. Natural side light (or artificial light) through windows in double wall. The antique chandelier is an exhibit.

DISPLAY COLLECTIONS: MIXTURE OF ANTIQUE AND MODERN ELEMENTS IN PERIOD FORMS

Detroit Institute of Arts.

Here the arches and the carved capitals are modern, the altar front and railing slabs antique—old and new easily confused by the visitor.

Courtesy of Detroit Institute of Arts

the eye and puts the observer in the proper frame of mind; living colors in the background make even the most unpresentable antique figure seem clean and fresh."

It is difficult to find any defensible middle ground between the gallery, however rich or simple, in the general style of the museum building itself, and the authentic room of a bygone period brought in and installed intact. Scrupulousness for the essentially creative integrity of the work of art, which has banished the casts and the copies of old masters (or segregated them for purely didactic uses), will exclude from the art museum reproductions or simulations or suggestions of old interiors. Even the room deceptively made up of antique elements from various sources is a makeshift for which European museums now apologize. Antique architectural elements, doorways, balconies, or ceilings may indeed be installed in their natural position in galleries, like any other single exhibits. It would seem to be a wise rule throughout the display collection that anything having a period character should actually be antique, within the limits permitted by reasonable restoration. To employ some old rooms with others of modern workmanship "in the style of the time" is to leave the visitor in uncertainty and cast doubt even on what is real.

In connection with the display collection, it will be well if there are certain units with the character of rest-places, offering the public relief not only from the strain of constant looking, but also from the drag of standing and slow walking. Vegetation and water are elements suited to increase the restful effect. The purpose in view is excellently achieved in the "garden courts" of the Cleveland and Detroit museums.

The study collections are for the specialist—be he student, artist, collector, merchant, manufacturer, craftsman or designer. In contrast to the display collection, the study collection should afford the greatest possible comprehensiveness, with ease of *reconnaissance*, and accessibility for detailed examination if desired. Although taste in the arrangement is always desirable, artistic grouping is here secondary to fullness, compactness and systematic order. Since collecting, as well as production, tends to be within the lines of single media or crafts, such as painting, engraving, pottery or sil-

Courtesy of Charles R. Richards

A STUDY COLLECTION GALLERY—WALL PAPER
Hall of German products—Cassel.

Courtesy of Detroit Institute of Arts

A PLACE OF REST: THE GARDEN COURT
Detroit Institute of Arts.

ver, it is wise to make the main division of the study collections a systematic one, by material and technique. Both the representative arts and the industrial arts will be included, in departments devoted, on the one hand, to paintings, prints, tapestries, stained glass, enamels, miniatures, ivories, etc., and on the other hand, to products of various metals (gold, silver, pewter, bronze, brass, iron and steel—with arms and armour), clay (pottery and porcelain), glass, textiles (with lace, embroidery and costume), paper, leather, wood (furniture, intarsia), etc.

By adopting historical order in the display collection and a systematic division by media in the study collections, as just suggested, there is, as we have seen, the advantage of a cross classification. If the visitor asks for French art of the eighteenth century he can be directed to a gallery of the display collection where there are a few fine examples of its products in each of the arts; if he asks for pottery he can be directed to a gallery of the study collection where there are ceramic wares from many periods and countries.

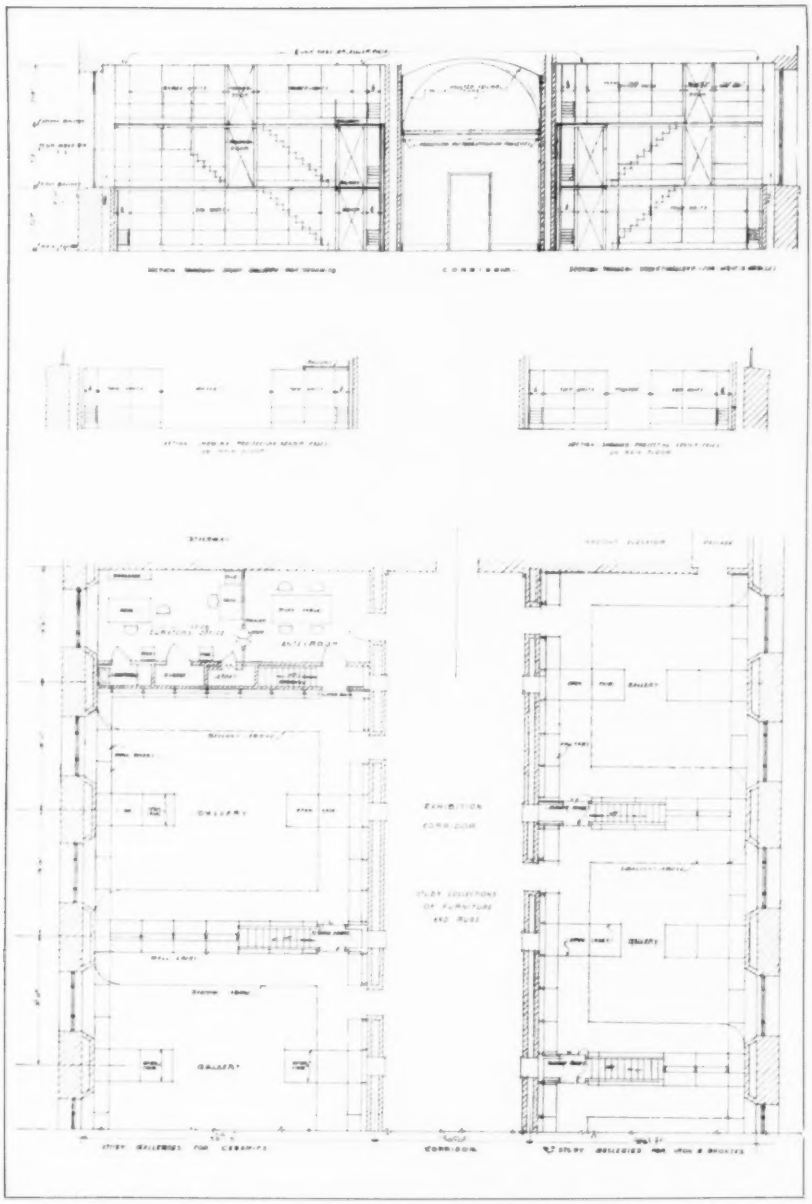
The manner of exhibition in the study collections will vary, of course, with the nature of the material: paintings and prints framed and hung on the walls, tapestries hung, rugs hung or laid on low platforms, stained glass set against windows or otherwise illuminated by transmitted light, textiles framed under glass or draped in cases, other classes of objects in cases of various sorts. The bulk of the objects in the crafts: pottery, glass, silver, and so forth, will require wall cases with shelves, or cases of corresponding height, open on all sides, with pyramid shelving. The doors of all cases should be readily opened, so that their contents are accessible either for rearrangement, or for examination by qualified visitors, under supervision.

In certain classes, especially prints and textiles, there will be many more objects than can be shown simultaneously in this way. In all the classes there will be duplicates, inferior, fragmentary, or damaged specimens which are nevertheless of historical or technical interest. These have often been stored inaccessibly at distant points, perhaps in basements unprovided with proper light, ventilation, or moisture. It is better to provide organically for all in connection with the corresponding departments of the study collections. Each of these should accordingly have some provision for compact live storage suited to the nature of the material and permitting the readiest examination. For paintings, sliding screens, closely spaced, may be multiplied in a room with ample light, and adaptations of this method may be employed for tapestries and rugs. Prints are best kept horizontal in flat boxes on the shelves of cabinets or stacks. Textile specimens of ordinary size may be mounted on hinged

STUDY COLLECTION GALLERIES FOR CERAMICS AND METALWORK

Philadelphia Museum of Art.

Side-lighted galleries with cases arranged in three tiers to give maximum capacity, with stairs in partitions between galleries. All case units of same length, 3′ 9″; varied depths. Hinged doors throughout. Cases 7′ 0″ high, glazed for display from height of 2′ 9″; below this, cupboards for related specimens not shown.

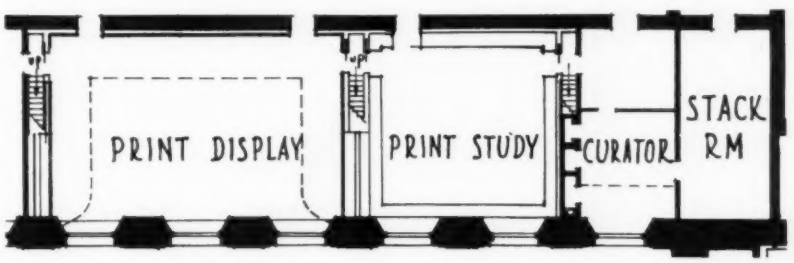


Courtesy of
Pennsylvania Museum of Art

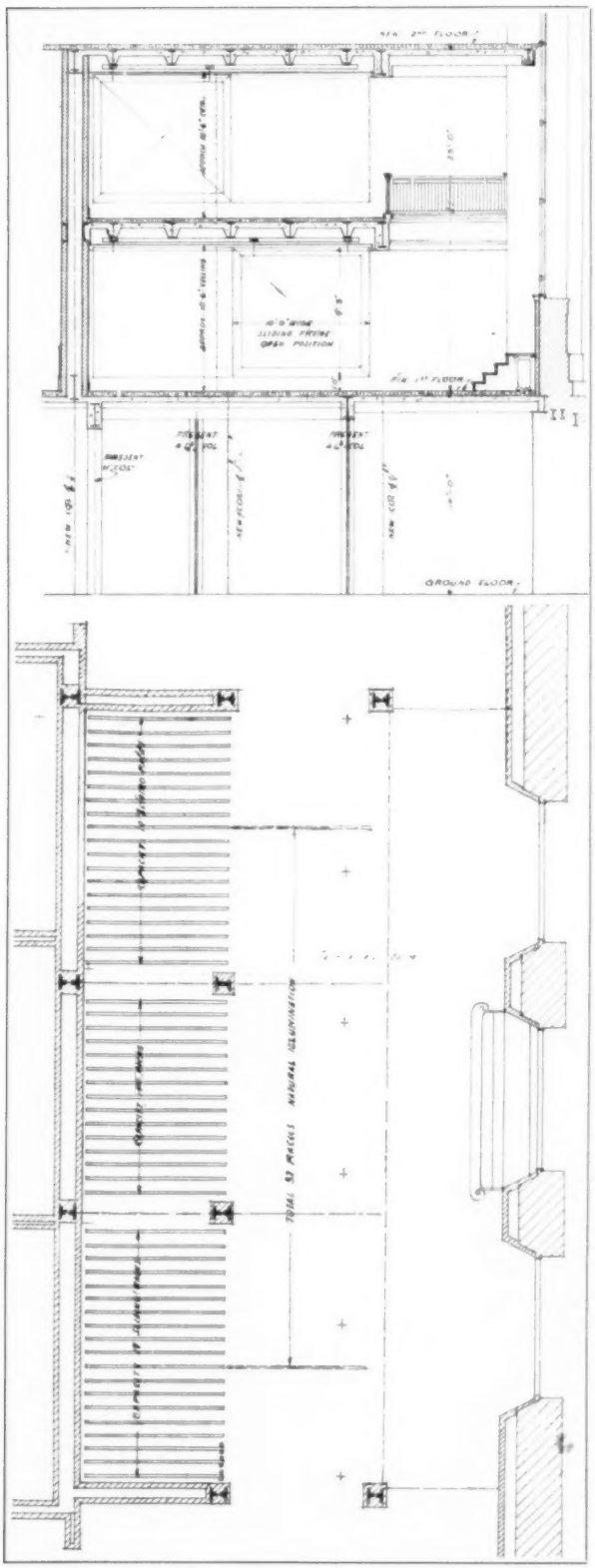
A STUDY COLLECTION SUITE

Print Department; Philadelphia Museum of Art.

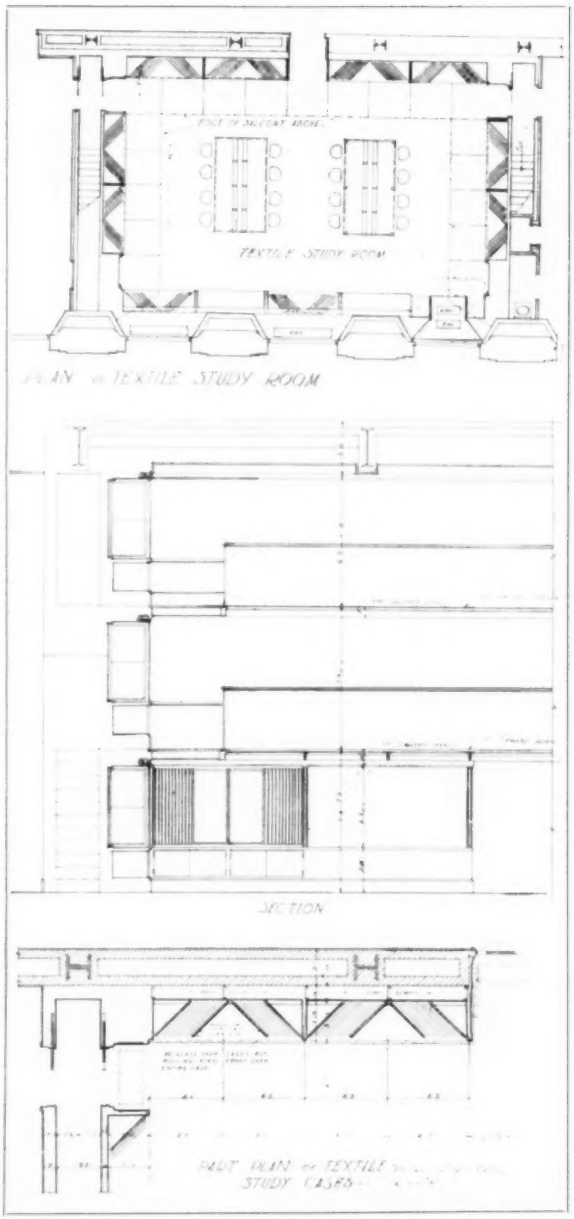
Typical of departments with large body of material shown in rotation in the gallery at the left and accessible for public consultation at the tables in the study-room, about which the material is shelved in three tiers.



Courtesy of
Pennsylvania Museum of Art



Courtesy of Pennsylvania Museum of Art



Courtesy of Pennsylvania Museum of Art

Above: PROPOSED DETAILS OF TEXTILE STUDY ROOM

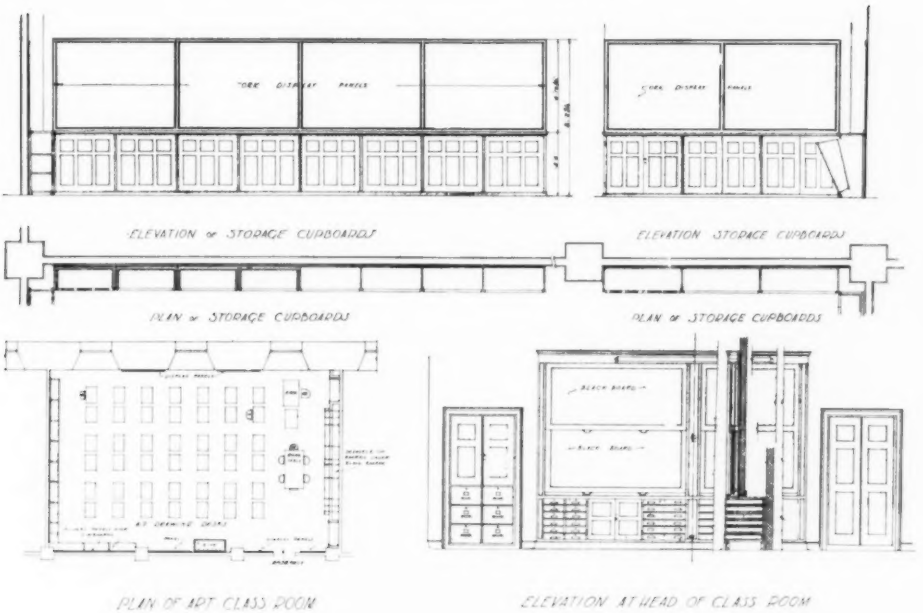
Philadelphia Museum of Art.

The entire collection of specimens presented for easy examination on hinged display racks, in three tiers. (Large pieces folded in trays in cupboards below.) Textile exhibition gallery and curator's office in direct connection.

At left: STUDY COLLECTIONS—PAINTING STUDY ROOM

Philadelphia Museum of Art.

Natural side light. Sliding frames in two tiers.


ELEVATION of STORAGE CUPBOARDS
ELEVATION STORAGE CUPBOARDS
PLAN of STORAGE CUPBOARDS
PLAN of STORAGE CUPBOARDS
PLAN OF ART CLASS ROOM
ELEVATION AT HEAD OF CLASS ROOM

This class room is fitted with drawing tables for work from museum material by public school pupils and with drawers and lockers for the storage of their material. Other class rooms have writing-arm chairs for talks to small audiences.

Courtesy of Pennsylvania Museum of Art

EDUCATIONAL DIVISION

Philadelphia Museum of Art.

Accessible from museum entrance when galleries are closed. Besides the main auditorium there are class rooms of various sizes, a conference room for round table discussion, suites of offices for the staff in the departments of public education and industrial relations, the library, and rooms for the collections of photographs and lantern slides.

racks as in commercial textile houses; larger specimens folded and kept in drawers. Small solid objects of numerous classes (pottery, glass, metal, etc.) may be accommodated in cupboards or trays below the glazed cases for corresponding types. In contrast with the dictum frequently heard, that a museum cannot have enough storage space, it may be said that its ideal should be to have no dead storage for works of art.

For the serious student's leisured examination of material in the study collections a place should be allotted in each department. Where the type of material is such that many people can be freely permitted to handle it, as with textiles and prints, a special study room may be provided, surrounded by the racks or cabinets for live storage, and supplied with large work-tables. Where the liability of the material to injury, through its fragility or otherwise, limits the number of persons qualified to handle it, economy of space and supervision may suggest providing table-space in the outer office of the curator, which in a large museum will preferably be close to his material.

Temporary exhibitions. The suite for special or temporary exhibitions should include at least one large and one small gallery to provide for exhibitions of varying extent and scale. It should be readily accessible from the entrance foyer, for the convenience of habitual visitors and strangers alike. Obviously it should not lie in the main line of approach to other units, since it will be frequently closed for the work of installation. It should also be conveniently served by the freight elevator, to obviate tracking exhibits through other galleries. One of the special exhibition galleries may serve for the periodic showing of recent accessions; in very large museums one may be permanently assigned to this use. In general it is better for the several departments to share these galleries for temporary exhibitions, rather than to have such galleries attached to individual departments, which may not be prepared to keep them filled with constantly changing exhibits. The print and textile departments, with their more numerous examples, form exceptions to this rule, and each may well have a small gallery of its own.

The educational division should comprise an auditorium, with projection room, one or more class rooms also with lanterns, a room or rooms for round table discussions, and offices for the chief of the division and his assistants. It will be advantageous if the library, the photograph and lantern slide collections can be in direct connection.

The *administrative division* of a large modern museum is a complex organization with varied and specialized functions. It has to secure the funds for the work of the museum, control their expenditure, whether for operation or for the increase of the collections, identify and catalogue the accessions (often five thousand or more items in a year), make photographs of them for record and for sale, run a printing plant at least for labels and placards, publish a magazine, operate shops at least for restoring and repairing, involving cabinet-making, painting and gilding, and upholstering, and conduct a book-and-gift shop for the sale of publications and photographs. It may also operate a restaurant and a lunch counter. It comes in contact with the public in about half these activities, which must therefore be housed in connection with the entrance foyer. Economy and convenience dictate that the general administrative units shall be concentrated rather than scattered. (Detailed study of the provisions in this division and in the mechanical plant will be found in the author's discussion of museum planning, following this article.)

The perfect museum will never be built, still less reduced to formula. In gaining certain advantages others must be sacrificed. Each museum problem presents its own peculiarities and difficulties. At least it may be faced with eyes open to their complexity, and with the illumination of a century of experiments and experience.

TECHNICAL NEWS AND RESEARCH

DECEMBER · 1929

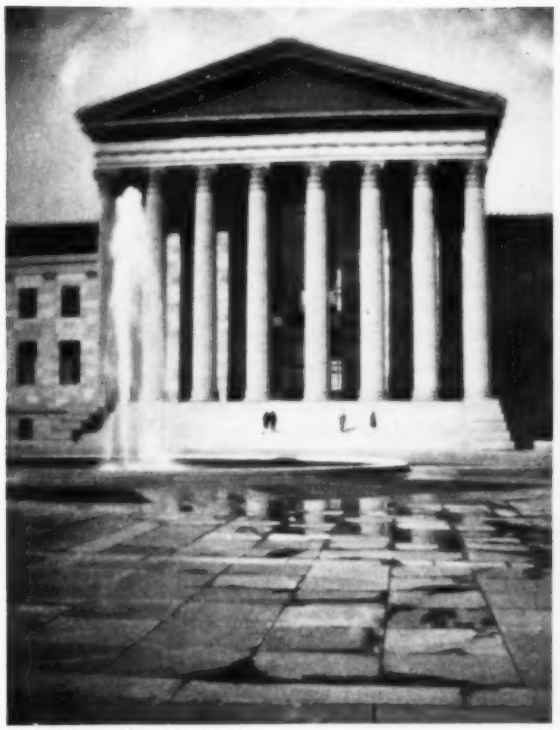


Photo. Whitenach

THE PHILADELPHIA MUSEUM

PLANNING THE ART MUSEUM

By Fiske Kimball

Previous Studies: Swimming Pools, Storage Garages, Apartment Houses, The Small House, Airports, Store Buildings, Kitchen Planning, Sound Proofing the Hospital, Planning High School Buildings, New Construction Methods, The Country House.

Future Studies: Prison Design, Principles of Remodeling, The Motion Picture Theatre.

PLANNING THE ART MUSEUM

BY FISKE KIMBALL

I. Site and Height

In the selection of site, opinion is general that too remote a location is disadvantageous. Convenience to transit lines is of much importance. A museum offers one of the best uses for our growing leisure, especially on rainy or stormy winter days, when a long walk through the wet is an effective deterrent. The Philadelphia Museum, with a subway entrance in one of the outer vestibules, presents an example in this regard. Ample parking space and a covered descent, without the need of crossing wide open terraces, are desirable for the large number coming in automobiles. If these considerations limit the extent of ground available for building, the increasing preference for side light (to say nothing of the use of artificial light) makes higher buildings possible. We can scarcely doubt that the "skyscraper museum," as proposed by Mr. Lee Simonson, will soon be a reality, at least for the study collections. Indeed going into the air is already being considered by the Chicago Art Institute.

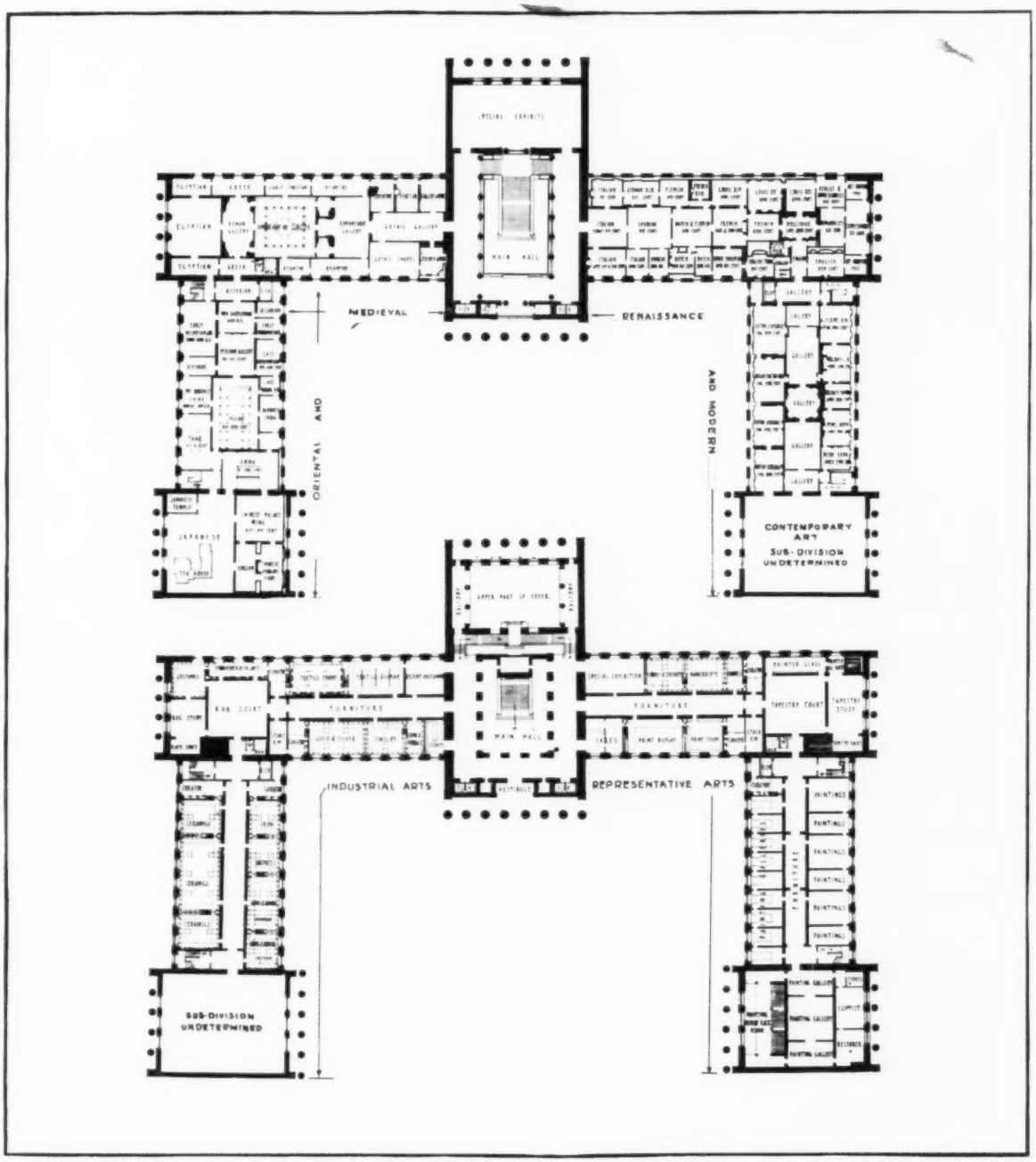
II. Types of Arrangement

A. The Galleries. The disposition of the elements in a museum is primarily a problem of the individual building, but certain general considerations and types of arrangement may be discussed. When paintings were the chief or only contents of an "art gallery," and skylights were tacitly regarded as the only suitable lighting for them, a one-story plan, which might be solidly built over, was the natural solution even for large museums. With more varied contents, and the recognized acceptability or superiority of side light for sculpture and for case-installation of small objects, a two-storied scheme was adopted with side-lighted galleries below, top-lighted above, and various solutions of the architectural difficulties presented by the facades. In such a scheme natural lighting of the lower story restricted the plan there to a double file of rooms, which in a large museum might be disposed along exterior or around interior courts. In the Vienna Museum and the Kaiser Friedrich Museum the external file of the upper story was devoted to side-lighted cabinets for smaller pictures, and the top-lighted galleries were relegated to the inner file along interior courts. A triple file in the upper story involved difficulties of lighting below, as we observe in the older plans of this sort. These difficulties may now be obviated by artificial light in a central corridor below, serving the units of the study collections.

The number of parallel files of galleries depends today more on questions of circulation in the display collection. With a single file of galleries, the closing of one gallery for installation will block the movement of visitors. Thus, in any plan other than the smallest, any single file should be paralleled at least by a corridor, as in certain parts of the Boston museum. A double file offers visitors the advantage of a very simple circuit—down one side and back the other. In a triple file any circuit which attempts to cover all the galleries of a certain section must be much more complicated; in return, the possibilities for various relationships of chronology and school are greater.

In many European museums (including the Vatican and the Rijks Museum) the circuits, even very complicated ones, have been made obligatory by the closing of doors, or even by the very absence of doorways leading in other directions. This is both annoying and fatiguing to the visitor—to the casual visitor lacking time or interest for the full circuit, and to the habitue who wants to get directly somewhere in particular. In the National Museum in Munich, the obligatory circuit of the display galleries (built that way from the start), embraces forty-four galleries; in the Residenz-Museum there it embraces over one hundred and fifty rooms—and, in both, one is not allowed to turn back, or to start at the other end. In such large museums it would seem better to spare the visitor many of the galleries, by letting them form optional side-trips from the principal circuit. Rather than force the visitor along this, he may be invited to follow it by architectural means—such as directness, and greater size of doorways. The Pennsylvania Museum is establishing a main avenue of galleries and other large units in the center of a triple file, with period rooms and smaller galleries at the sides.

The general form of the plan is also influenced partly by the problem of circuits. A single block of buildings extending left and right from a central entrance may involve the disadvantage that on reaching the dead ends one must return to the center and start out anew on the other side. The same may be true of a U, H, I, or L shaped plan. If the building, as usual, stands free on all sides, these plans make the building all facade, with consequently greater expense and fixity of openings. If period rooms are placed along such a facade, their walls may be kept back a few feet from it so that the light may spread to their own windows. Such a double wall presents one positive advantage, that the artificial lighting of these rooms, otherwise a problem, may be effected



Courtesy of Pennsylvania Museum of Art

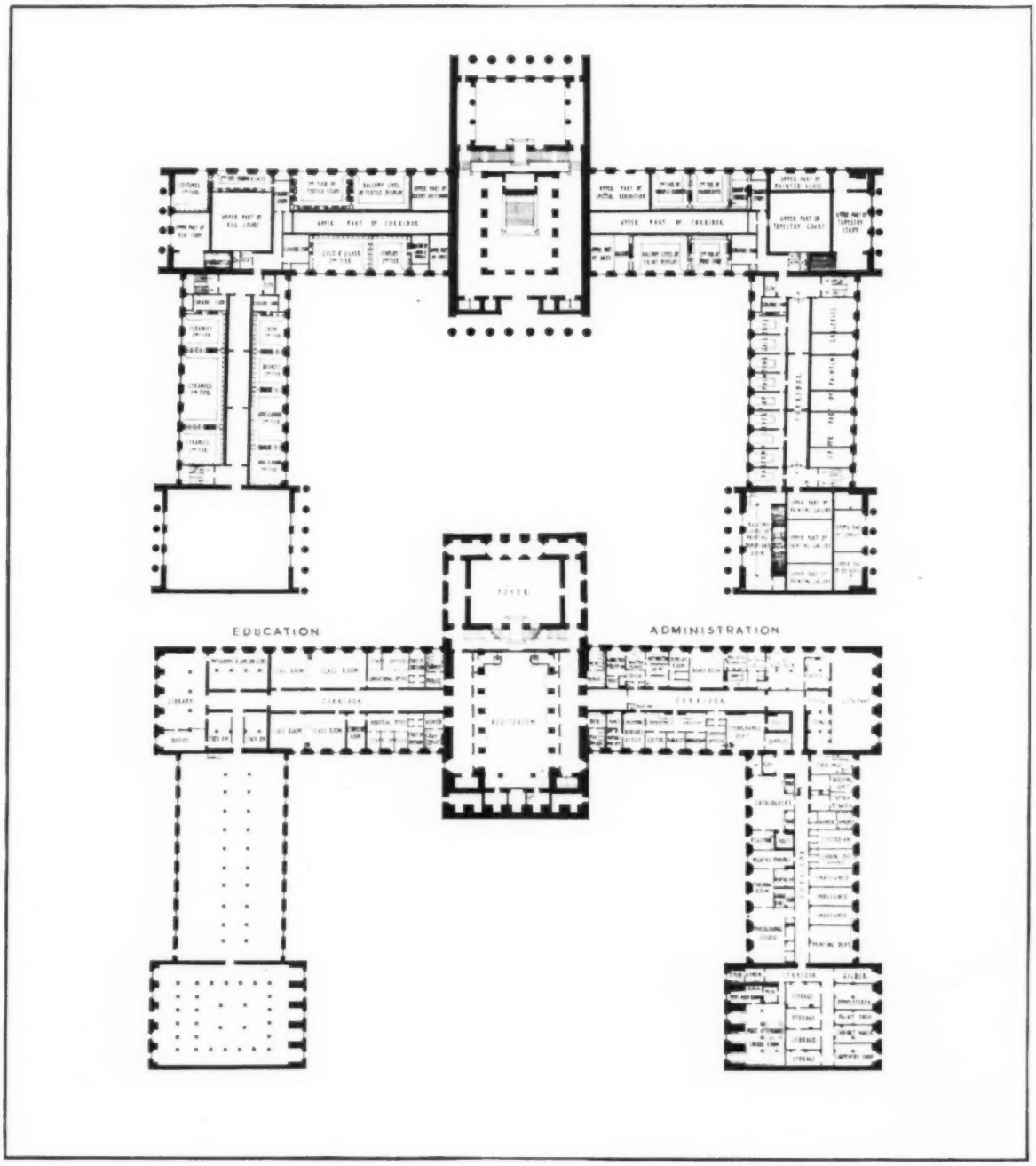
Above: PHILADELPHIA MUSEUM OF ART, SECOND FLOOR: DISPLAY COLLECTION

Horace Trumbauer, C. L. Borie, C. C. Zantzinger, Architects.

Central file of galleries with artificial clerestory light, flanked by files of period rooms with side light (natural or artificial) through windows in double wall. Evolutionary order, along longitudinal axes, traversing sections devoted to different countries in the order of their artistic supremacy. The center file of galleries constitutes a "main street" for the casual visitor, with exit stairs at numerous points. Large gallery for special exhibitions directly accessible from main stair-hall.

Below: FIRST FLOOR: STUDY COLLECTIONS

A comprehensive series of study collections embracing all classes of objects in the museum, classified by material and technique. Self-contained suites of study galleries, study rooms and curator's office for each department, separately accessible from main corridor. Galleries for small special exhibitions directly accessible from main stair hall.



Courtesy of Pennsylvania Museum of Art

Above: PHILADELPHIA MUSEUM OF ART, FIRST FLOOR MEZZANINE: STUDY COLLECTIONS

Horace Trumbauer, C. L. Borie, C. C. Zantzinger, Associated Architects.

The story-height of 22 feet clear is used (in different departments) undivided, divided by a mezzanine floor, and divided by two balconies, so as to give the maximum capacity for the exhibition of study material.

Below: GROUND FLOOR: EDUCATION AND ADMINISTRATION

Both the educational and the administrative divisions are separately accessible from a principal entrance of the building even when the galleries are closed.

through their windows, as at Philadelphia, and partly at Boston and Detroit. By disposing the plan around one or more interior courts it is possible to secure not only an unbroken general circuit, but liberty in the placing of openings toward the courts. This is of great advantage where antique rooms are to be installed. The double wall may still be retained, but with the inner wall closer to the outer, and the windows registering perfectly.

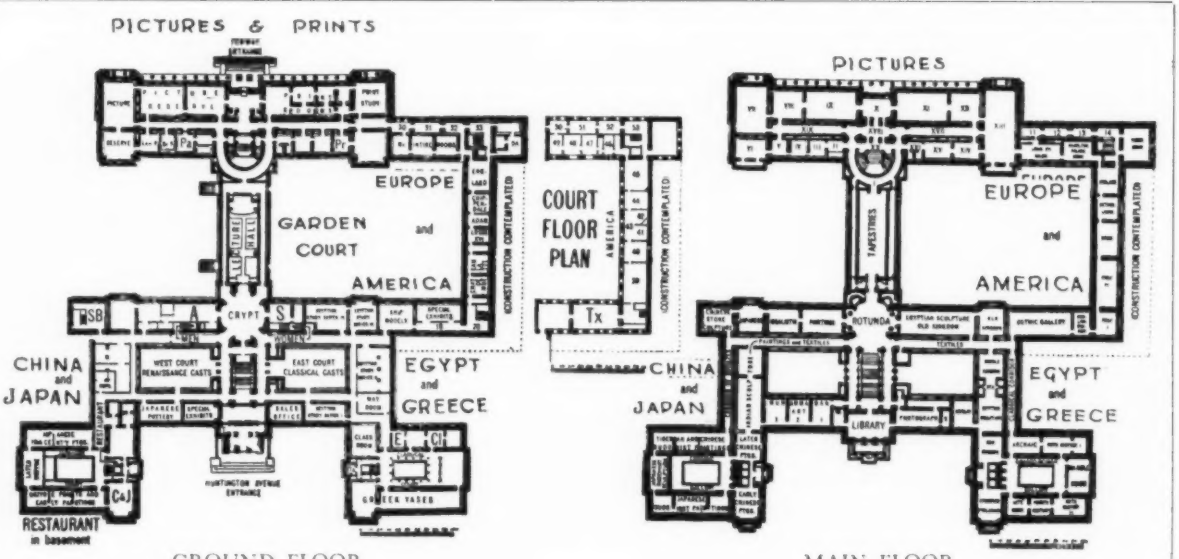
B. Elements of Access and Circulation. Besides the primary elements of the plan, there are the elements of access and circulation. Because of the value of its contents and the necessity of control, a museum belongs in the class of buildings where the number of entrances should be reduced to as few as possible. Two is doubtless the minimum; one for the public, another for receiving goods, the staff using one or the other of these. In certain cases the fire-laws may require two public exits from the building at separated points. It is not enough that one of these should have self-closing firedoors, for it is precisely the matter of *exit* from the building which must be watched, with consequent increase of personnel. The quarters of the educational department should be accessible at hours when the galleries are closed. If these quarters are readily reached from the main foyer, the galleries may be shut off with gates, out of hours, as in the Detroit Institute of Arts. Otherwise one must provide a separate entrance—preferably closed when the main entrance is open. The staff offices may also be open at different hours than the galleries, so that they also should be capable of being reached by the public without passing through the galleries, and preferably without creating still another entrance.

Grouped near the public entrance should be the various facilities for serving visitors: coat rooms, public telephones, toilets, information and sales facilities. The old combined "Information and Sales Desk," still necessary in small museums, has the disadvantage that those merely wishing information must often wait during the prolonged process of a sale. It is better, if possible, to have one desk solely for information. For sales, on the other hand, more than a mere counter is desirable in a large museum. The lead of the American Museum of Natural History and of the Metropolitan Museum may here be followed, by the provision of a sales room, with files for a considerable stock, and tables and chairs to permit more extensive examination and selection. A "Members' Room" of club-room character, provided with copies of museum publications and with telephone, writing and toilet facilities may well be located nearby. The number of these facilities, with the great cost of duplicating and attending them, further reinforces the arguments against multiplying public entrances.

The horizontal elements of circulation in museums are generally the exhibition galleries themselves, and so far as the display-collection is concerned this is desirable. In the study collections—where the object is precisely not to drag the ordinary visitor through units in which he is not interested, but instead to leave the special student undisturbed—a corridor leading to the different self-contained units is desirable. Large arched or colonnaded interior openings without doors (while admissible in a relatively static collection like the Munich Glyptothek) are out of place in an active museum, where frequent re-installation, besides requiring privacy and security, is unsightly and productive of noise. Doorways with doors sliding out of sight, large and high enough for the passage of the works concerned, offer the best connections between galleries. In the location of these doorways architects sometimes need to be reminded that axial positions are precious for the placing of works of art, and that it is often better to balance doorways to left and right of the center. Axial vistas to the works so shown are desirable,but need not be unduly prolonged. Thus a skilful alternation of axial and of balanced openings will give the best results.

In the vertical circulation a monumental staircase is required only if the display collection occupies the floor above the public entrance. Ordinary stairs will suffice for access to the study collections. Elevators for the public are a convenience rather than a necessity unless the museum exceeds two stories in height. Should the educational division occupy several stories, as in the American Museum of Natural History, it is advantageous that one elevator, at least, be large enough to accommodate an entire school class. The service elevator should be large in all three dimensions, with doors opening to its full width and height.

C. Public Offices. The public offices present several points which call for attention. As, from time to time, many of them contain objects of value, control of visitors is specially important. Accordingly the main administrative corridor should not be left open, but governed by an information clerk, having the telephone switchboard at her desk. At the meetings of the trustees, works of art acquired since the last meeting are generally displayed. Thus the board room has some of the requirements of a gallery. It should be of ample size, with simple wall surfaces. A counter of pedestal height along one or more walls will be advantageous for the display of sculpture and small objects. As every museum must depend largely on gifts, there should also be a small show room, with excellent light, attached to the director's offices, so that a single work of art may be isolated for display to a potential donor. A large storage closet will be needed in connection with this.

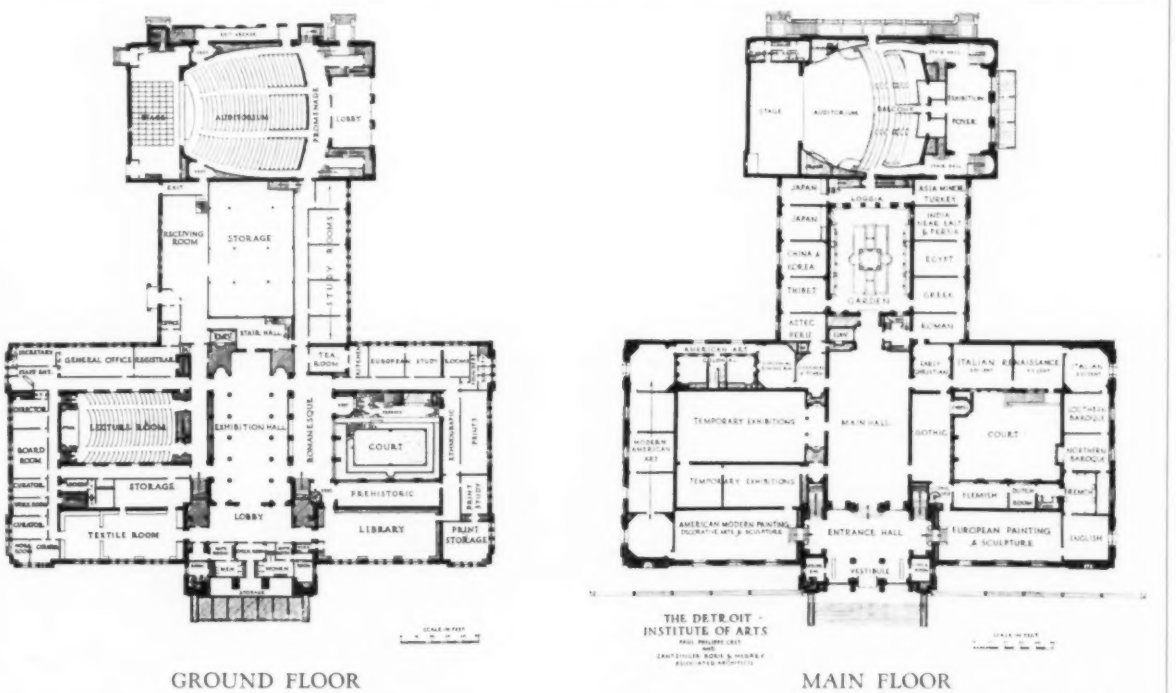


Courtesy of Museum of Fine Arts

THE MUSEUM OF FINE ARTS, BOSTON

Guy Lowell, Architect.

Galleries mainly side lighted, except principal painting galleries (skylights). Single and double files of galleries, generally paralleled by corridors. Primary division partly historical, partly systematic, partly qualitative. Principal departments in relatively isolated pavilions with separate circuits. General display collection complex, tortuous. Educational facilities scattered.



Courtesy of Detroit Institute of Arts

DETROIT INSTITUTE OF ARTS

Paul Philippe Cret, and Zantzinger, Borie and Medary, Associated Architects.

STUDY COLLECTIONS, EDUCATION AND ADMINISTRATIVE SECTIONS

In general, the left half is occupied by administrative facilities, the right half by educational facilities. For the latter, the main entrance and foyers above are used, the galleries there being closed off at night by gates and doors.

DISPLAY COLLECTION, TEMPORARY EXHIBITIONS

Galleries side lighted throughout, except main hall (clerestory), and temporary exhibitions (skylights). Single file of galleries, in general, interrupted in case of installation. A simple circuit, following the outer wall, will embrace substantially all the permanent galleries, though not in order of general evolution; or separate circuits may be made of any of the three main divisions. The galleries for temporary exhibition are easily accessible to constant visitors, and their closing for installation does not interrupt the general circulation.

Courtesy of Detroit Institute of Arts

INTERNAL LOGGIA FOR LIGHTING A PERIOD ROOM

Detroit Institute of Arts.

This permits natural lighting of the room through its own windows when these do not register with those of a monumental exterior façade. Artificial lighting of the room is also effected through the internal windows.

Courtesy of Detroit Institute of Arts

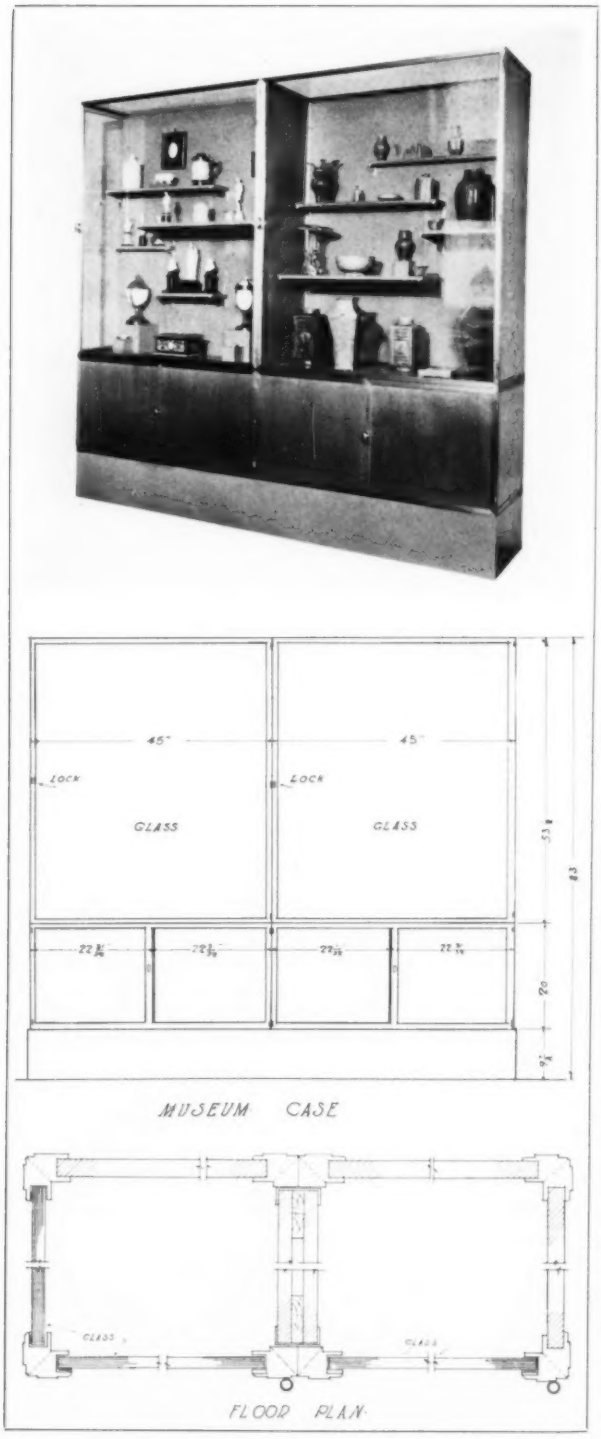
WINDOWS VARIED FOR PERIOD ROOM INSTALLATION

Detroit Institute of Arts: Paul Cret; Zantzinger, Borie and Medary, Associated Architects.

Arranged about an interior court, the variety of treatment does not interfere with the architecture of the building.

D. Service Section. In those offices and shops to which the public is not admitted, the order will be influenced by the sequence of operations for a work of art entering the building. Let us take as an instance an important Louis XVI sofa, purchased abroad, with its paint, gilding and upholstery original but in bad condition. It is unloaded and the crate opened for customs inspection. It is then unpacked. The frame of the piece is found to be wormy and the upholstery infested with fleas. It must accordingly be fumigated at this point before these are carried further into the building. It then goes to the Registrar's office. As it is bulky, the responsible curator comes here to examine it for its authenticity before it is accepted and entered in the accession records. The Trustees will wish to see it, so it is taken to the board-room for the coming meeting. It is next photographed for a record of its original state, and sent to the shops to be repaired. The upholsterer removes the tattered fragments of covering, as he must note the style and methods; the cabinet maker strengthens the frame; the painter and gilder touch up the finish; the upholsterer applies his material. The piece now goes back to the photographic studio to have presentable photographs made for publication and sale. Meanwhile the label written for it has issued from the printing plant. The piece is now ready for exhibition, first in the gallery for recent accessions, and then in its place in the display or study collections.

In connection with the Registrar's Office there should be an ample storage room for new accessions and works in process of cataloguing. The files of this office also become very extensive. Not far removed should be the office of the Custodian, with a workroom (provided with sinks) in which textiles may be washed and mended, pottery washed, and silver polished, both on its first receipt and subsequently. The photographic department is of particular importance. Contrary to older practice, most photographers prefer now to work by artificial light of known intensity, so that natural top-light or north light is no longer essential. Proper division of the department is desirable to permit simultaneous work in photographing objects, copying, lantern-slide making, developing, printing and finishing. Substantial provision should also be made for the storage of negatives, which multiply rapidly, and should be



A SHOW-CASE DESIGNED BY THE PHILADELPHIA MUSEUM

With the cooperation of the Art Metal Furniture Company. Several sizes of shelves can be attached anywhere to the back on concealed strips; the back itself can be moved forward to give a shallow case.

quite as well arranged as the photographs or lantern slides made from them. Recent experience has indicated that if films are extensively used exceptional precautions should be taken to isolate this storage against fire and explosion.

It will be advantageous if the carpenter shop, paint shop and upholstery shop, with their fire hazards, can be isolated in an interior court.

The receiving and shipping room should be provided with covered, metal-lined bins, preferably on wheels, for the keeping of excelsior, etc. Store rooms will be needed for keeping the packing cases of current traveling exhibitions, for museum cases not in use, for exhibition-screens, pedestals, and so on.

Locker and toilet rooms will be needed for the office help, for the cleaning women, and for the guards and attendants—the last of considerable size, with a proper smoking and lunch room.

III. Mechanical Plant

The Mechanical Plant of a museum is very extensive, and requires a competent superintendent, who must have an office and storeroom as well as a shop for his mechanics and electrician.

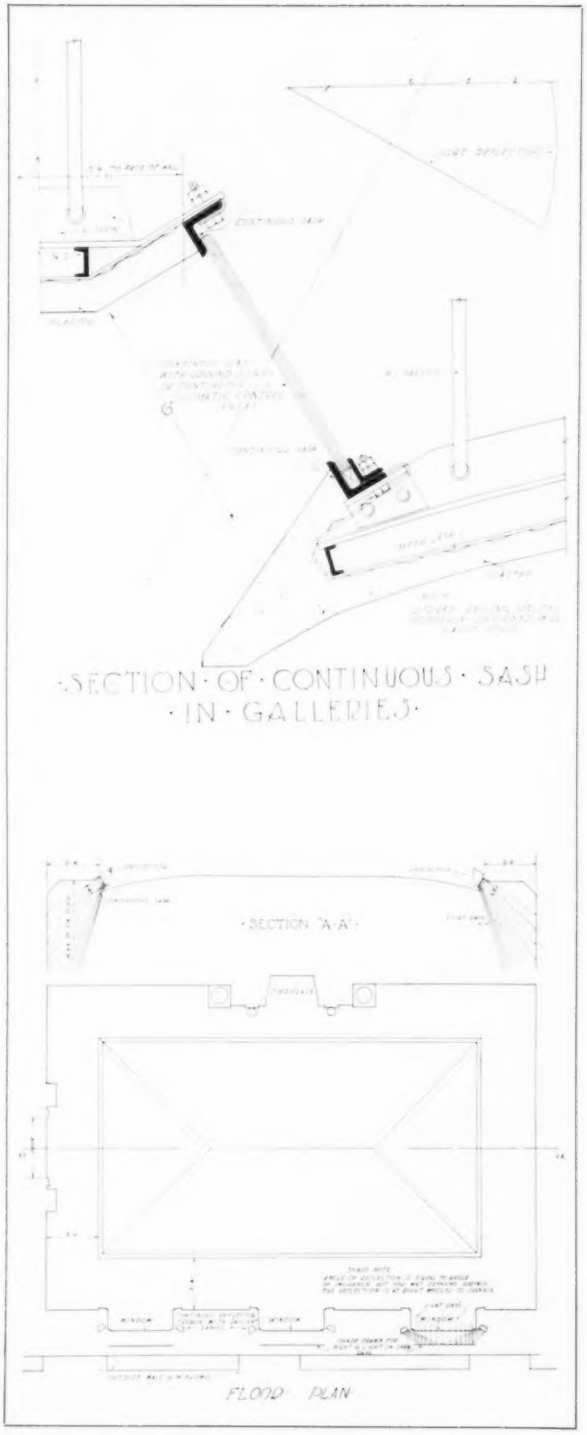
A. Heating and Ventilation. Contrary to the belief of some engineers, ventilation must provide for a high peak load. At the Philadelphia museum over twenty thousand people have visited twenty galleries within four hours during a Sunday afternoon. Humidification is necessary, except in summer, to prevent American climate and steam heat from cracking pictures, panelling and furniture, although too much will rust armor and metal. Humidity should be kept at from 50 to 55 per cent. Humidifying permits and indeed requires that lower temperatures be maintained in the heating system, 65 degrees being quite ample for winter comfort, and better for the works of art. It would be desirable, theoretically, to use a cooling and air conditioning plant for the maintenance of even temperature and humidity in the summer months, but such a system would be quite expensive. For a museum of the size of the new Pennsylvania Museum of Art it would require energy equivalent to make three to four hundred tons of ice every twenty-four hours to cool the air, plus energy equivalent to twenty tons to bring the air up to room temperature after dehumidification. The rooms may be kept comfortable and condensation prevented by rapid circulation of air. In summer months when there is considerable humidity this circulation of air may amount to ten changes per hour which will produce noticeable air currents. For dry climates three to five changes will be sufficient. The air should be brought in at the ceiling and taken out at the floor level in order to keep the room free from dust. In addition it will be desirable to provide for removing some air from the top of the

room on the side opposite from the intake. With artificial lighting this is especially desirable in summer on account of the heat generated by lights near the ceiling. As the wall space should be kept as clear as possible it is advisable in the event that a fireplace cannot be used for an air outlet to provide registers in the base board. If the air pressure within the museum is kept slightly above the air pressure of the outside atmosphere the leakage of dust through windows and doors will be greatly reduced. On windy days it may be found desirable to run the exhaust fan at half capacity of intake fan to build up an interior air pressure.

B. Lighting. The matter of lighting is important not only for itself but for its bearing on the arrangement of the museum. A reaction against the skylight may be widely observed. The objections urged against it are: glare, producing eye-strain; high illumination of the floor instead of the walls; reflections on pictures; excessive height of galleries to avoid this (unsuccessful for the end walls, in any case); dimness in bad weather; excessive heat in summer; heat losses and obscuring by snow in winter. Light from clerestory windows, where it can be obtained, is free from these disadvantages, except that of the even greater gallery-height required. Ordinary side light from windows (by which the old masters, at least, worked) is now again often preferred for paintings. It requires that galleries shall be deep and relatively narrow, since the wall opposite the windows is disadvantageous both to paintings and to sculpture. The system of composite display, permitting the placing here of tapestries and other objects, ameliorates this difficulty to a considerable extent. Period rooms naturally require side light through their own windows.

Advocacy of artificial lighting alone is now frequently met with among lighting engineers. This is based in part on the objections to skylights, which do not apply to side-lighted galleries. Much of it rests also on the premise that illumination should be of absolutely equal intensity over the whole area of the hanging spaces. It may well be questioned if this is not a false premise, and whether the variation in intensity of natural side light is not only tolerable but actually to be preferred to monotonous "scientific" lighting. On the other hand, it has been amply demonstrated that paintings and other works of art may be adequately seen by well-designed artificial lighting (provision for which must now be made in any case), so that too great sacrifices need not be made for natural lighting in instances where other important advantages are to be secured by sacrificing it.

For dark days and occasional evening use, facilities for artificial light are now regarded as standard for all parts of the building. Special circuits should be

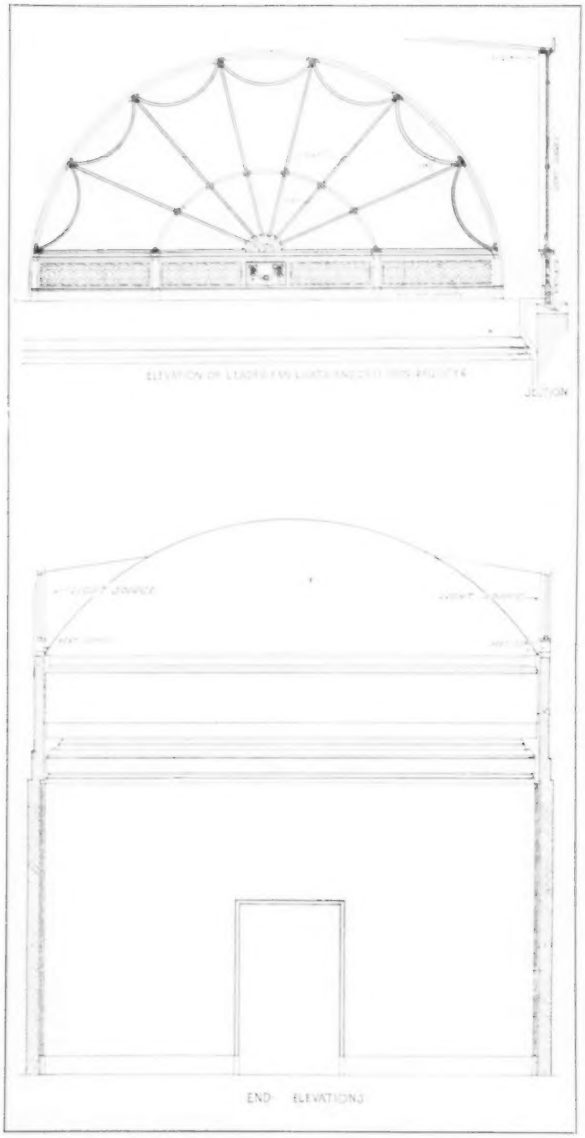


Courtesy of the Pennsylvania Museum of Art

FLOOD-LIGHTING THE WALL BY CONCEALED REFLECTORS

Philadelphia Museum of Art.

Note the additional arrangement for securing an effect of daylight through the windows on nights and dark days.



Courtesy of Pennsylvania Museum of Art

CLERESTORY LIGHTING
Philadelphia Museum of Art.

arranged for slight illumination for watchmen.

C. Protection. With an electrical watchmen's signal and fire-alarm system may be combined a call system, very useful for locating officials in any part of the large building. Telephones should be located in connection with this at strategic points through the galleries. The Pennsylvania Museum has adopted a type of watchman's system whereby the watchman carries a hand set and plugs in at his various stations and reports to a central switchboard. The system has joker boxes and automatic devices for reporting to the local police in case of trouble or irregularity. As part of this system there is a call system which will enable the central operator to get in touch with all the guards in different parts of the building. This system has been developed to meet the special problems of museum guarding.

A centralized vacuum cleaner system is much to be preferred to portable electric machines, the bags of which must be detached in the galleries.

In view of the nature of museum contents, hose sets and sprinkler systems are of doubtful advantage even in the shops and in the shipping room. With fireproof construction it would seem better to fight any small local fires with chemical extinguishers, for some of which the claim is made that they are harmless to works of art.

In general it may be said that, in view of the greater difficulty of securing funds for operation than for building, any expense for initial equipment which will reduce the operating personnel is well-advised.

IV. Architectural Character

As to the architectural treatment of the building, the suggestion has frequently been made that it would be better to abandon any monumental character for the barest enclosure of space, to leave more funds for accessions and operation. Actual experience scarcely bears out this idea. The funds for building come, with rare exceptions, from sources which would not be affected by these considerations, whereas a handsome building which is a source of civic pride attracts not only visitors but gifts and endowments. With sufficient skill, convenience need not be sacrificed to exterior effect. That the contents of the building represents largely the act of the past would not seem to demand an architectural treatment in historic forms. Rather, the nature of art itself would suggest a freely creative treatment. In the interior, as on the exterior, spaciousness, serenity and architectural dignity have their place, especially in the display collection. In the study collections the character of the clean well-ordered storehouse will not be out of place.

OUTLINE REMINDER FOR MUSEUM SPECIFICATIONS

By Erling H. Pedersen

Plastering

Walls of rooms need not be plastered where old panelling, period rooms, etc., are to be used.

Concealed picture mouldings should be provided in high galleries for hanging of rugs, tapestries, etc. Galleries should have wall surface into which nails can be driven. This may be cinder block or similar wall covered with a plastic paint wall finish or fabric wall covering.

Plumbing

Provide lavatories in small closets in private offices and shops.

Make special study of kitchen layout for equipment and appliances.

Question of type of restaurant service to be decided upon—cafeteria, etc.

Provide drinking fountains in offices and public spaces.

Roughing for fire stand pipe system if required.

Gas piping in kitchen, shops, etc.

Heating and Ventilation

Provide automatic temperature regulators and air purifiers.

Study location of separate humidifier plants for different sections of the building.

Place thermometers, thermostats and hygrometers.

Radiator enclosures.

Style of register grilles.

Location of registers (see sketch, opposite page).

Heating plant should be located in a separate building.

Provide increased ventilating circuits and thermostats for galleries.

Acoustics

Some attention should be given to the problem of sound-deadening within the museum. Needless to say the ordinary precaution will be taken for sound-proofing and vibration-proofing of fans and other machinery. Due to the size, shape and relatively small amount of furniture in the average gallery, attention must be paid to sound absorption of walls and ceilings. This is complicated by the desire for a good nailing surface on the wall and the necessity of eliminating dust. A cinder block wall with fabric covering would give good sound absorption and provide a good surface for nailing but would hold considerable dust. A covering of cement and asbestos nailing concrete or plastic paint would eliminate the dust but the sound absorption would be very greatly reduced. The walls might be covered with a sound absorptive wall board covered with a fabric providing the joints were properly closed to prevent leakage of dust. Wood floors laid on sleepers resound as a drum to the impact caused by walking, especially from women's heels. It has been found that laying the flooring in mastic eliminates much of this drum-like effect.

Fire Protective System

Provide compressed carbon dioxide fire protection with portable tanks on wheels. "Freezes" the fire without injury to art works.*

Consider the installation of several engine systems, with patrol units consisting of three or four engines properly distributed throughout the building.

Provide hand extinguishers easily accessible in the galleries, offices and public spaces.

Provide layout of extinguisher location on all floors.

Provide for refilling service.

Sprinkler system should not be used in galleries where there are exhibitions of objects but is of value where nitrocellulose photographic film is stored.

Vacuum Cleaning

Type of equipment. Portable or central.

Capacity.

Special outlets.

Special attachments for cleaning tapestries, etc., and high points of galleries.

Make provision for cleaning space over Principal Exhibition Galleries.

Museum Cases

Structural frame supports for museum cases and balconies should be constructed independently of any building structural steel. This will allow for easy removal of case installation which may be necessary during future development or changes in the gallery arrangement.

Have manufacturers submit sample units to test the lighting, spacing and mechanical features for installation.

Bronze metal preferred in statuary and Verde antique finish.

Sizes reduced to a minimum standard, to be determined by the Museum.

All parts of interiors of cases to be easily accessible, with hinged panels, glass tops and sides.

Dado height of standard dimensions, 18″ and 30″ high, as determined by the Museum.

Bases of all cases preferably in marble of standard height.

Provide drawers in all cases between first shelving and base where first shelf is over 30″ high.

*See pages 34-37, Inspected Fire Protection Appliances National Board of Fire Underwriters Laboratories for Approved Makes.

Lighting in cases. All independent cases to have separate lighting at top. All wall cases where balconies occur shall be lighted from the under side of the balcony.

Shelves should be adjustable, of various lengths and widths, so that arrangement of display is variable.

Shelves should be of different materials, such as wood painted and wood covered with fabrics or plain metal painted, where glass is not desirable.

Cases to be dust proof.

Back lining of cases should be of composition board such as vehisote to permit use of thumb tacks with loose moulding strips for fabric coverings. Certain back linings should be of plate glass mirror.

Pyramid blocking should be provided for use on inside of cases for special displays. These may consist of loose individual metal blocks of standard sizes.

Locks. Simplify system of locks so that there will be a standard key for each department, with one master control for all departments.

Keys should be numbered.

Types of cases shall be designed and dimensioned to a minimum number of standard types which will provide for the various display of objects, as determined by the Museum.

Ornamental mouldings and structural shapes of all cases should be reduced to a minimum.

Simple brackets should be provided for the support of adjustable shelves.

Provide for glass vitrines and pedestals of wood, metal, stone or marble, of standard sizes.

Special Equipment

Scales and receiving room and storage.

Waste receptacles for packing material should be metal compartment on wheels.

Metal counters—receiving room and storage.

Loading platform—receiving room and storage.

Small trucks for moving objects.

Small winches for heavy objects.

Exterior portable awning for special receptions.

Carpet or rubber runways at entrances and for rooms and galleries to protect floors when removing objects and changing exhibitions.

Kitchen equipment.

Coat racks.

Cane stands.

Racks and stands should be especially arranged for spaces provided.

Metal furniture—tables, chairs, etc.

Consider the use of metal filing cabinets, as this provides a better fire protection than wood cabinets.

Blue print file cabinets.

Special types of Venetian blinds in offices and galleries.

Office equipment.

Special fireproof vault rooms for offices.

Stock wood or metal and glass office partitions in standard unit lengths which may be interchangeable.

Provide glass transoms in corridor partitions.

Intermediate cyclone fences should be provided in sub-basement storage, with individual doors or gates for each compartment. This will allow for the classification of storage, and still permit the fighting of a fire.

A metal landing platform should be installed in general receiving room.

Rolling wire frames covered with fabric from floor to ceiling for the storage of Study Collection paintings should be installed. These are most satisfactorily supported by hangers at the ceiling. (The installation of these rolling wire frames has been sufficiently developed in the Fogg Museum at Harvard.)

Floors

Floors in corridors—stone or terrazzo. Stone, marble, or terrazzo flooring should in no case be highly polished, for the safety of the public.

Study Collection galleries—cork or composition, as a noise deadener.

General offices—heavy linoleum.

Rooms where old woodwork is used should be of wood or other flooring of a type harmonizing with the period and style.

Restaurant—terrazzo or stone.

Kitchen—heavy linoleum or rubber tile with sanitary covered base.

Corridor between offices—To avoid monotony and get the desired effects in period and other rooms a wide variety of floors should be used. Consider the use of woven carpet.

Hardware

All deadlocks should be taken into consideration.

A master key system should be used for ordinary *doors* between galleries but storage vaults and special storage rooms should be on separate keys to restrict the number of persons having access to items of value and to limit danger if a key is lost.

Keys should have a flat surface to receive stamped letter and number.

A schedule of the locks should be made with the manufacturers, to establish a system of numbering the doors to identify the keys.

Painting

Woodwork in galleries.

Color and finish varied according to type of installation.

Flat finish preferred.

Sign painting throughout building where required.

Electric Wiring and Electrical Equipment

A system of distribution and control with panel boxes conveniently located for lighting and appli-

ances in public spaces, such as corridors, galleries, entrances, also for administration floor offices, shops, restaurants, auditoriums, etc.

Emergency exit lights if necessary.

Conduits for telephones.

Telephone system for switchboard and extension location should be considered.

Watchman's night lights throughout building.

Special kitchen and shop equipment high power outlets, including photographic department.

Conduits on exterior of building for future flood lighting.

Fans in vaults.

Electric protection system for windows and loose objects and special installation in galleries, with trouble indicators and siren calls properly distributed in the building.

Electric cooking appliances.

Dish washing equipment.

Electric towels.

Motion picture wiring and apparatus.

Radio broadcasting connections.

Emergency exit lights in auditorium.

Stage lighting.

Lighting under balconies, Study Collection.

Vacuum outlets.

Electrical equipment for shops, motors, saws, planers, finishers, etc.

Electrical printing equipment.

Electrical clock system in galleries, offices.

Master clock control.

Push buttons at all entrances.

GLAZING

Office partitions—translucent and clear glass.

Transoms to light corridors.

Mirrors in public and private wash-rooms.

GALLERY DOORS

Metal or wood doors should be provided for openings between all galleries. This is necessary to exclude public and isolate the noise in galleries during installation of new exhibitions.

ORNAMENTAL BRONZE

Bronze sign boards with hinged, glazed panels should be installed at exterior entrance doors of the building for notices, etc.

Bronze sign boards on pedestals for exhibition notices and directions to the different galleries should be provided for use throughout the building.

REFRIGERATION

Individual kitchen refrigeration and drinking water fountain units.

Cold storage rooms for rugs, textiles, tapestries.

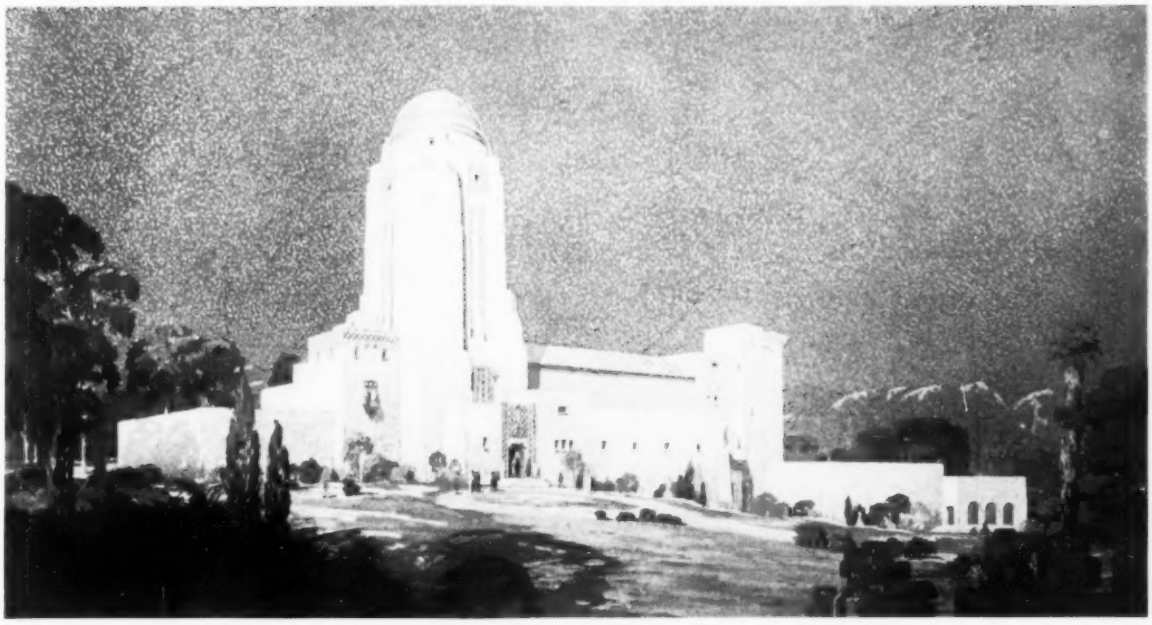
PERSONNEL, SERVICES AND MATERIAL REQUIREMENTS OF PENNSYLVANIA MUSEUM OF ART

By GEORGE C. BARBOUR, *Supt.*

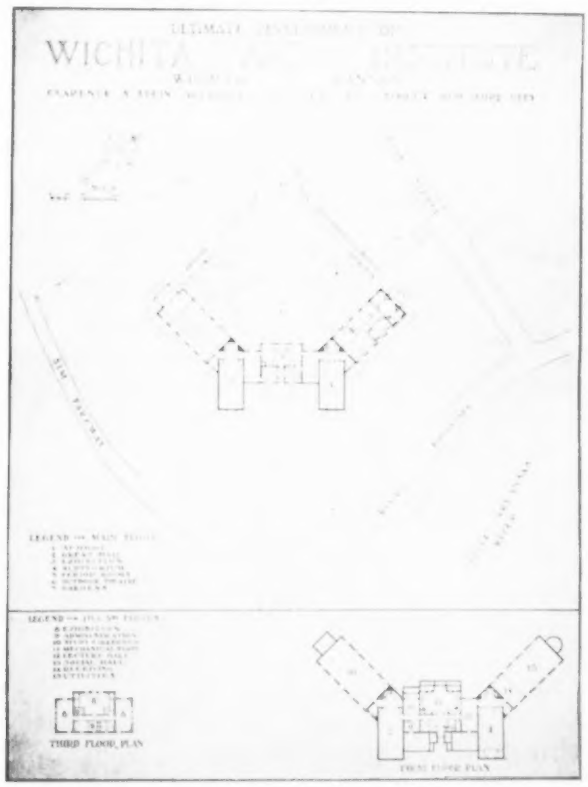
PERSONNEL	SERVICES	MATERIAL
	Galleries	
Attendants Watchmen	Cleaning walls, floors Dusting exhibits Waxing and polishing floors Setting up and changing exhibits Removing and storing exhibits Repairing walls and painting Cleaning skylights, windows, lighting units and cases Polishing brass	Exhibits and live storage of exhibits
	Main Stair Hall	
Attendants Watchmen Night scrubbers	Cleaning walls Dusting exhibits Setting up and changing exhibits Removing and storing exhibits Operating auditorium when necessary Cleaning skylights, windows Cleaning lighting units and cases Repairing walls and painting	Exhibits and live storage of exhibits
	Toilets	
Attendants	Disinfecting Cleaning Repairs to equipment Replacements	Soap Paper towels Sanitary napkins

PERSONNEL	SERVICES	MATERIAL
	Offices	
Executives	Administrative	Office furniture, fixtures, counters, etc.
Curatorial Staff	Research	
Office help	Classification Educational Editorial	
	Receiving Shipping	
Shipping Clerk	Receiving Fumigation	Packing cases, etc.
Packers	Packing and shipping Mothproofing	(Fireproof storage)
	Operation	
Chief Engineer	Heating	Coal
Chief Electrician	Coal supply and ash removal	Oil
Shift Engineers	Steam generation, transmission, distribution, boiler	Waste
Mechanics, plumber,	maintenance, packing, joints, valves, etc.	Machinery
electricians, helpers	Ventilating and Humidity Control	Tools
	Plumbing repairs, maintenance, hot and cold water	Brooms
	coolers, filters, vacuum and vacuum cleaner, rain	Brushes
	conductor and soil lines	Electric light units,
	Lubrication and Supervision of Machinery	wire, switches, etc.
	Elevator, sewing machines, printing and wood-working machinery	
	Electric Supply	
	Electric distribution	
	Electric repairs	
	Electric replacements	
	Extensions and revision of ducts and circuits	
	Electric lighting units	
	Small fans	
	Electric lamps	
	Projection machines, Maintenance of flood lighting	
	Care and Painting of steel suction and house tanks, exposed structural steel, steel stairs, ladders and walks to lighting units	
	Cleaning of spaces not occupied by galleries, lofts above galleries and basement areas, roofs, terra cotta, etc.	
	Upholsterers Shop	
Upholsterer and help	Repair and restoration	Sewing machines
		Benches and racks
	Gilder Shop	
Gilder	Repair and restoration	Fabrics, hair, etc.
		Benches and supplies
	Printing Shop	
Printer and help	Printing catalogues, bulletins, cards, etc.	Presses
		Benches
	Cabinet Maker	
Cabinet maker and help	Repairs to exhibits and restoration	Racks and Storage
		Benches
		Racks
	Carpenter Shop	
Carpenter and help	Repairs and alterations to building	Supplies and storage
		Benches
		Racks Glue pots
		Steam boxes
		Lumber
		Band saw and light jointer

Note: *Study Galleries*, the same as galleries.



PROPOSED MUSEUM FOR PASADENA ART INSTITUTE
CLARENCE S. STEIN, ARCHITECT



MUSEUM OF WICHITA ART INSTITUTE
CLARENCE S. STEIN, ARCHITECT

Editorial Announcement: Fiske Kimball's exposition of the principles of museum planning is to be followed in January by Clarence Stein's "Museum of the Future." As the architect of the Wichita Art Institute Mr. Stein has already made notable contributions to museum design.

THOMAS HASTINGS

1860-1929

A LEADING personality in the world of art, Thomas Hastings attained pre-eminence and held it longer than is the lot of most men. The series of great buildings which bear his name are known to his contemporaries at home and abroad. Two of his early works still stand forth as epoch making, the Ponce de Leon Hotel at St. Augustine, Florida, which immediately set a new standard in American architecture, and the Blair Building in Broad Street, New York, which marked a step in the development of logical design for tall buildings. His most recent work was the redesign and rebuilding of the Senate in the Capitol at Washington, and at the time of his death he was occupied on the architectural design of a new bridge to span the East and Harlem Rivers.

Thomas Hastings carried a precious active quality into his work. He believed that no matter how great the demands on an architect's time might become he should always draw and design every day and most of the day, and he lived up to this precept. His work, therefore, bore the unmistakable imprint of his individuality and had much of the humanness so characteristic of the designer.

Interested in people he was naturally interested in human affairs. These interests were widespread. He never lost touch with the Old World and the Old World delighted to honor him. Chevalier of the Legion of Honor, member of the Institute of France, Fellow of the Royal Institute of British Architects and Royal Gold Medallist in England, the two European countries he knew so well placed him high on their rolls of honor. In America every distinction that can come to an artist was his.

EVERETT V. MEEKS.

PATRONS OF ARCHITECTURE

ARCHITECTURE is an art which depends perhaps more than any other on patronage. That is: projects produced in a garret during the starvation of the artist figure not at all in architectural history, and architecture—except for the student—can hardly be held to exist until it is executed. The architect, therefore, must have his work commissioned or else he is not an architect at all, discounting the few who can be their own clients, and architecture, to an extraordinary extent, is dependent upon general public taste, knowledge and appreciation. It is generally held that the high level of eighteenth century architecture was due quite as much to the public as to the architects; and as for the general level of nineteenth century architecture, it is also as usually blamed on the public. A study of the ideal projects of the period does not altogether support this view and it may be quite as true that it was because the architect had too free a rein that the work was bad. Some of the best works of the period, such as Bechford's two towers at Forthill and Lausdonn, were done for men of taste and education who took so much interest that they were in the truest sense patrons as well as clients.

If there are any laymen competent to act thus today, I fear the architect avoids them like the plague. It is far easier to deal with a client than with a patron. The taste of those who are inclined toward princely relation to the arts in America today still tends toward the safe and the historical, so that modern architecture neither gains nor loses much by their patronage. The general tendency of today is toward specialization; and the client feels his aesthetic function has been fulfilled—if he sincerely believes himself to have one—in the preliminary choice of an architect. If he be more particular and desires to carry his discrimination further, he may institute a competition. On account of the expense he is unlikely to do this unless for the publicity it may bring. For architects probably do not do their best work in competitions and the judging of them is an art in itself which does not have much to do with architecture.

But the choice of an architect is a very complicated matter, vastly more complicated than, for example, the choice of a painter to do a portrait. With business, social, economic, even geographical criteria predominant, the aesthetic element in the decision is very slight indeed. Or rather the aesthetic element is more likely to come in awkwardly at a later stage. After an architect has been chosen for a variety of good and sufficient non-aesthetic reasons, the client announces his desire for a modern house "like some of that Dutch and German stuff, but not so wild," or "like that stuff in Paris—there's a whole street of it—only more homelike"—if, of course, he doesn't want an English house or a Spanish one.

The value of the independent practice of architecture depends upon the ability of the individual architect in some sort of conjunction with the individual client or patron to arrive at a single particular solution differing from an ideal or normal solution in

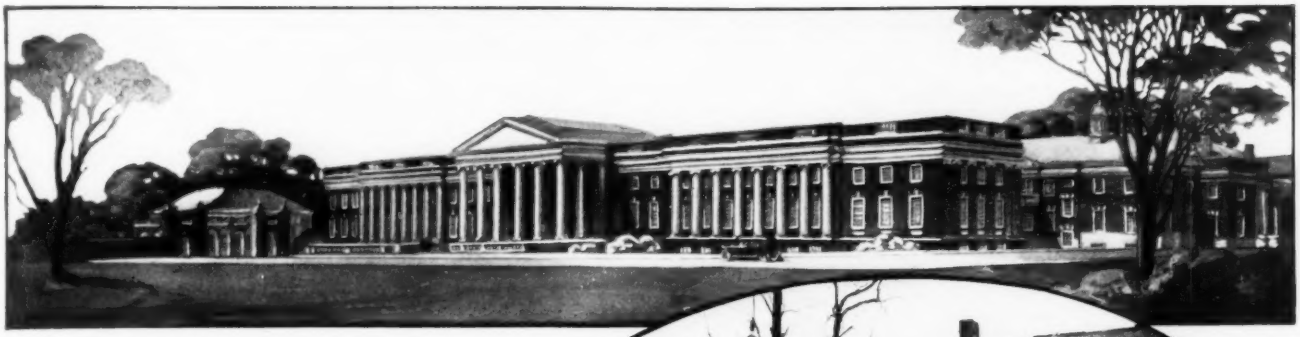
important essentials. Otherwise, architecture might better be a state activity and standards of design handled as standards of hygiene are for the most part now handled. The ideal of most of the younger architects who have given much thought to contemporary problems is exactly such a socialized architecture. Judging from the results now being accomplished under the degenerated individualistic system, it is difficult not to sympathize with them, especially if one compares American low price residential sections with such as are provided more or less socialistically about Frankfurt and other German cities. Surely, moreover, Park Avenue would be a vastly finer thoroughfare had its apartment houses all been built at once by a single office, even if in the "Venetian mood" or the "Lombard manner."

In so far as one looks at architecture from the point of urbanism, the advantages of state controlled design and the disadvantages of individual design are very obvious. If cities are to be machines for working in, it is a terrific misfortune that the parts should be produced in so many different design factories. Moreover, for those who are afraid of the effect of uniformity, such splendid eighteenth century examples as Bath and Nancy display that if the controlling architect has any imagination there need be less uniformity of the depressing kind than there is on Park Avenue today.

On the other hand, what we know of state controlled design in this country, at least, does not encourage the desire that it should become ubiquitous. Our post offices, for example, may be for their periods creditable performances, but no one in his wildest dreams would consider that in any period they ranked very high in the total mass of production. If the municipally provided houses in Germany be good, there are few to deny that the houses erected by a few individual architects in Paris, for clients who in several cases deserve truly to rank as worthy patrons of architecture, are vastly better. Even more to the point is the fact the best European municipal architects usually admit that they do finer work in private practice than in large scale public work.

Socialization of architecture might raise the general level of design; but it would almost certainly inhibit the finest works. For they must usually be of limited scale and more perfectly adapted to an individual case than any work can be to a typical, normal or ideal case. Individual patrons are still necessary for great architecture and the young architects for all their despotic dreams of rebuilding New York, or at least Long Island City, will do better to concentrate upon the immediate and special problems which they are fortunate enough to be allowed to handle. They will, moreover, hardly do the finest work without the cooperation of a client so intelligently interested as to be worthy of the name of patron. How much we owe to those who commissioned Richardson and Wright we shall probably never know. But Taliesin does not suggest that the architect is his own best patron, any more than does the Soane Museum if these be compared with Wright's and Soane's works produced under circumstances that would appear to have been less ideal. Virtuosity in adaptation to a difficult situation remains a prime quality of architectural art, as the works of the inventor of the term *machine a habiter* perpetually suggests.

HENRY-RUSSELL HITCHCOCK, JR.



New Medical School, University of Virginia, Charlottesville, Va. *Architects:* Coolidge, Shepley, Bulfinch and Abbott, Boston, Mass.

At right: Hospital Group of Buildings, University of Virginia, Charlottesville, Va.

Approximately 800 gallons of Barreled Sunlight were used by the University of Virginia for interior painting in the Hospital Group of Buildings and the new Medical School

Without frequent repainting their interiors are always *light - clean - handsome*

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* * *

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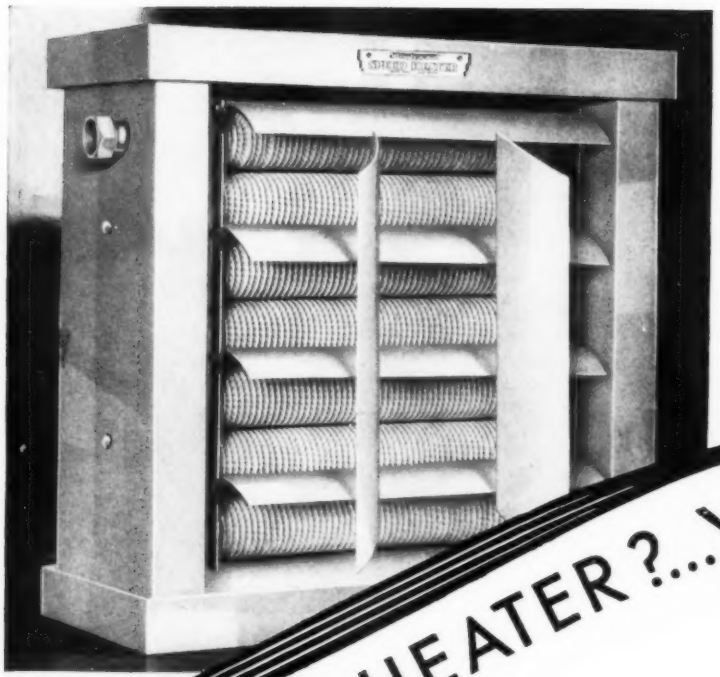

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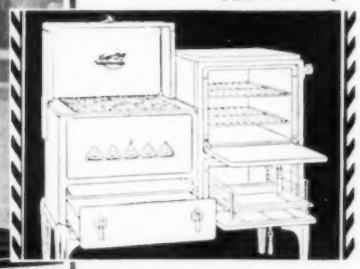

1. *"Patrician"* Model shown (left) in Italian Grand Antique Marble Finish with Old Ivory Trim. Handles of Onyx Green Bakelite. Also *"Jonquil"* Model in Old Ivory with Peacock Green Trim.
2. The "Magic Chef" Oven is equipped with the famous Lorain (Red Wheel) Oven Heat Regulator.
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BESIDES the normal dividend a good central heating system pays out of profits that come from lower coal and labor bills, reduced fixed charges and other economies, owners of steam distribution lines in Ric-wiL Conduit will receive an extra dividend this winter.

It will come to them directly out of the *extra efficiency* of Ric-wiL, efficiency over and above the guaranteed 90%, out of the Ric-wiL ability to hold heat losses from 2% to 5% lower than can be expected from ordinary conduits.

As an indication of what this means, take the case of one customer in New York who has a 2400′ run of steam line insulated with Dry-paC in Ric-wiL Conduit. On the basis of an actual test of efficiency, the extra over 90% saving to the owner will amount to $450.00 per year.

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Steam lines were run under this walk to eliminate snow shoveling. But the pipes were insulated with Ric-wiL and the snow melting idea didn't work.

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See pages 2519-2598
for a listing of
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In Mr. Charles E. Ringling's Florida home at Sarasota, pictured above, a sense of comfort has been combined most successfully with one of splendor. In the achievement of its perfect effects every detail of this spacious residence was considered most carefully.

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A.R. 12-29

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Last Big Obstacle to Increased Construction Removed by Stock Collapse

THE principal check the stock market puts on general construction activity is when it absorbs an undue proportion of the country's investment funds, causing supplies of capital and credit available for construction investment to decrease and interest rates on time loans and mortgage money to rise. These things have already happened and have already been readjusted. Whatever real harm the stock market can do to the construction industry has been done in the past seventeen months of declining construction volume.

Two big breaks in the stock market took place just ten years apart: October, 1919, and October, 1929. Ten years ago practically all of the important adjustments affecting construction activity had to be made after the market collapse; this time all the important ones were made before. The stock market break in 1919 came three months after the peak of construction contracts; this time it came seventeen months after construction's peak.

In 1919, before construction could go ahead, the bond market had to turn upward; this happened seven months after the stock market break. This year the bond market turned upward shortly before the stock market break; this adjustment has been made. In 1919 interest rates on time money had to reach their peak and turn down; this they did eleven months after the stock market break. This year time money passed its peak and turned down shortly before the stock market break; this adjustment has been made. In 1919 the New York Federal Reserve rediscount rate had to reach its peak and turn down; it rose to 7 per cent seven months after the stock market break and did not drop again to 6½ per cent until eighteen months after the stock market break. This year the New York Federal Reserve rate was increased to 6 per cent three months before the stock market broke; was reduced to 5 per cent on October 31 and again to 4½ per cent on November 14; this adjustment has been made.

In 1919 general commodity prices were inflated and had to reach a peak and turn down; this took eight months from the time the stock market broke. This year, general commodity prices had been declining twelve months before the stock market broke; they were not inflated and call for no considerable adjustment. In 1919 building costs had skyrocketed to a high state of inflation; they had to reach a peak and turn down; this took seven months after the stock market break. At the present time, building costs have been practically stable for six years and no considerable adjustment is called for. In 1919 the most important decisions to build new projects rested with corporations and lending institutions (many of which had been involved in business inflation) whose resources, credit and confidence were considerably impaired. The most important decisions to build now rest in the main with corporations and lending institutions whose financial stability, credit resources and confidence in the economic progress of the country are greater than ever before.

Consequently, the recent collapse of the stock market, some months overdue, was the final big financial adjustment required for improved building conditions. The building decline of the past seventeen months has been unduly prolonged, has effected a considerable measure of adjustment between building supply and building demand, and should end within a relatively short time, after whatever additional minor adjustments have been completed.

THOMAS S. HOLDEN,
Vice-President in charge of Structural Division, F. W. Dodge Corporation.

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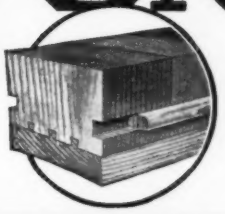

Bloxonend is made of Southern Pine with the tough end grain up. It comes in 8 ft. lengths with the blocks dovetailed endwise onto baseboards

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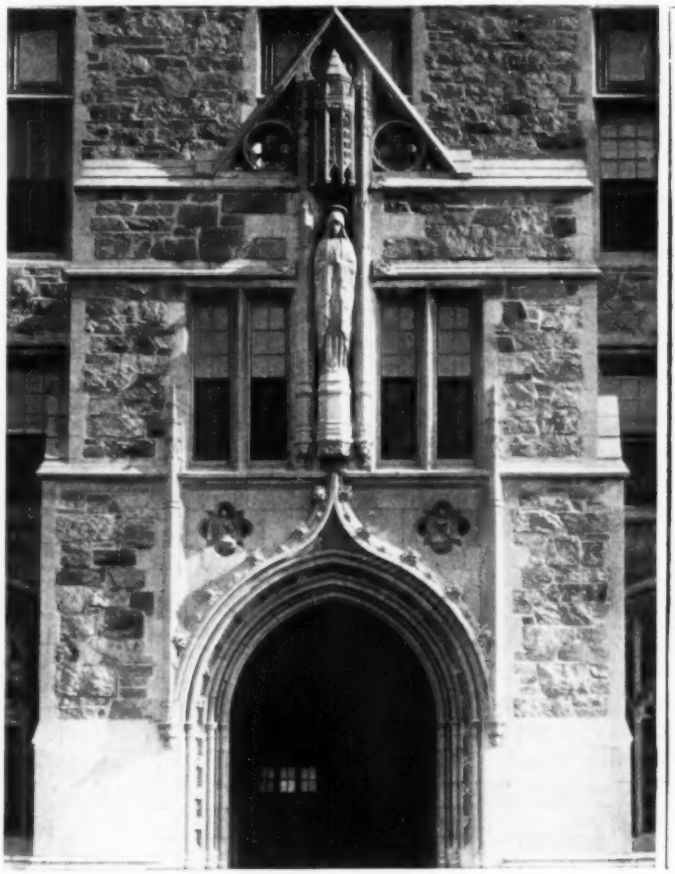

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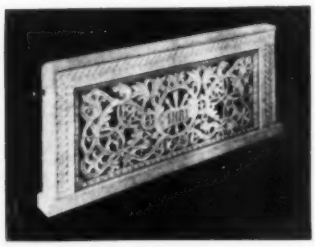

Section of cast stone altar rail, with polished hand rail. All ornament perforated.

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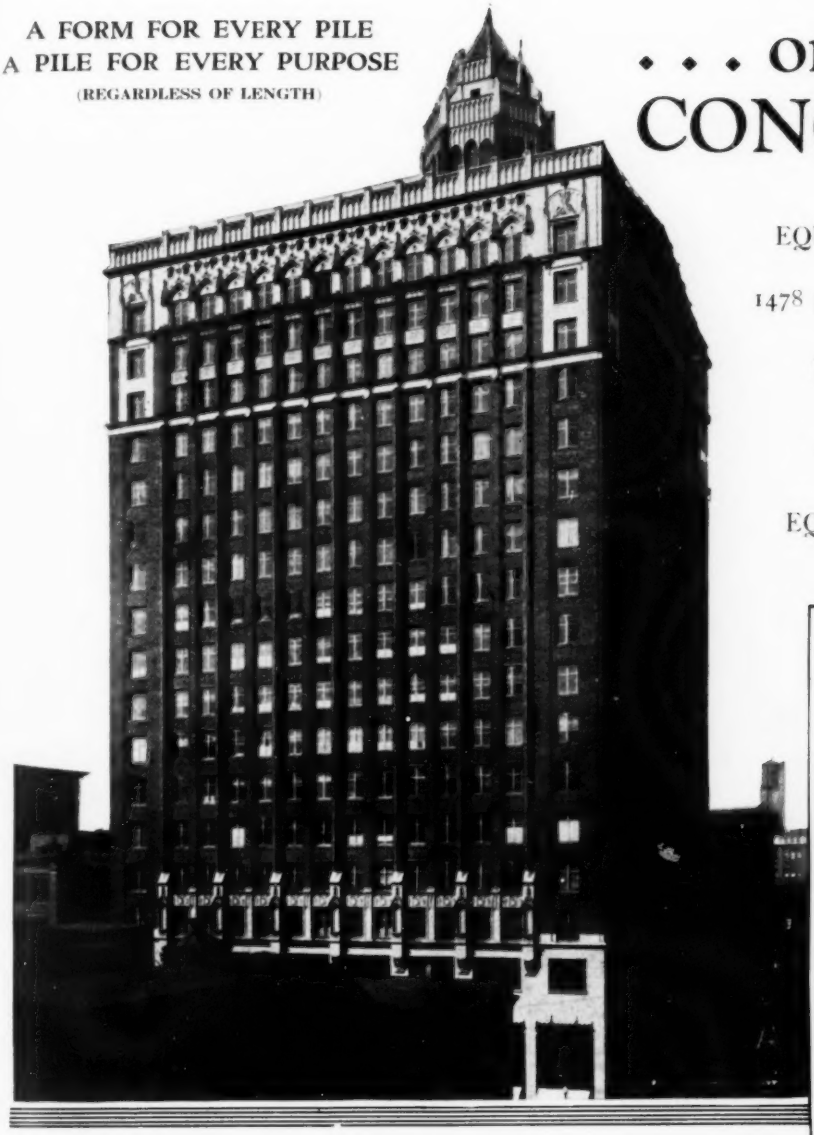

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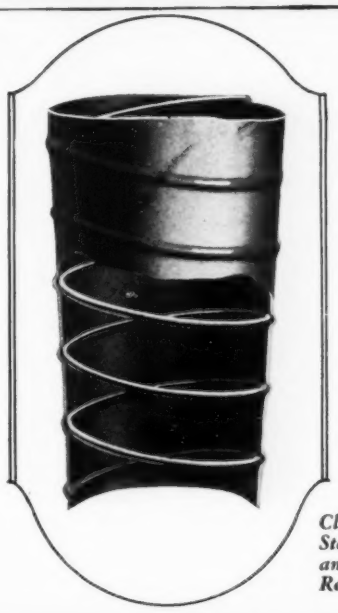
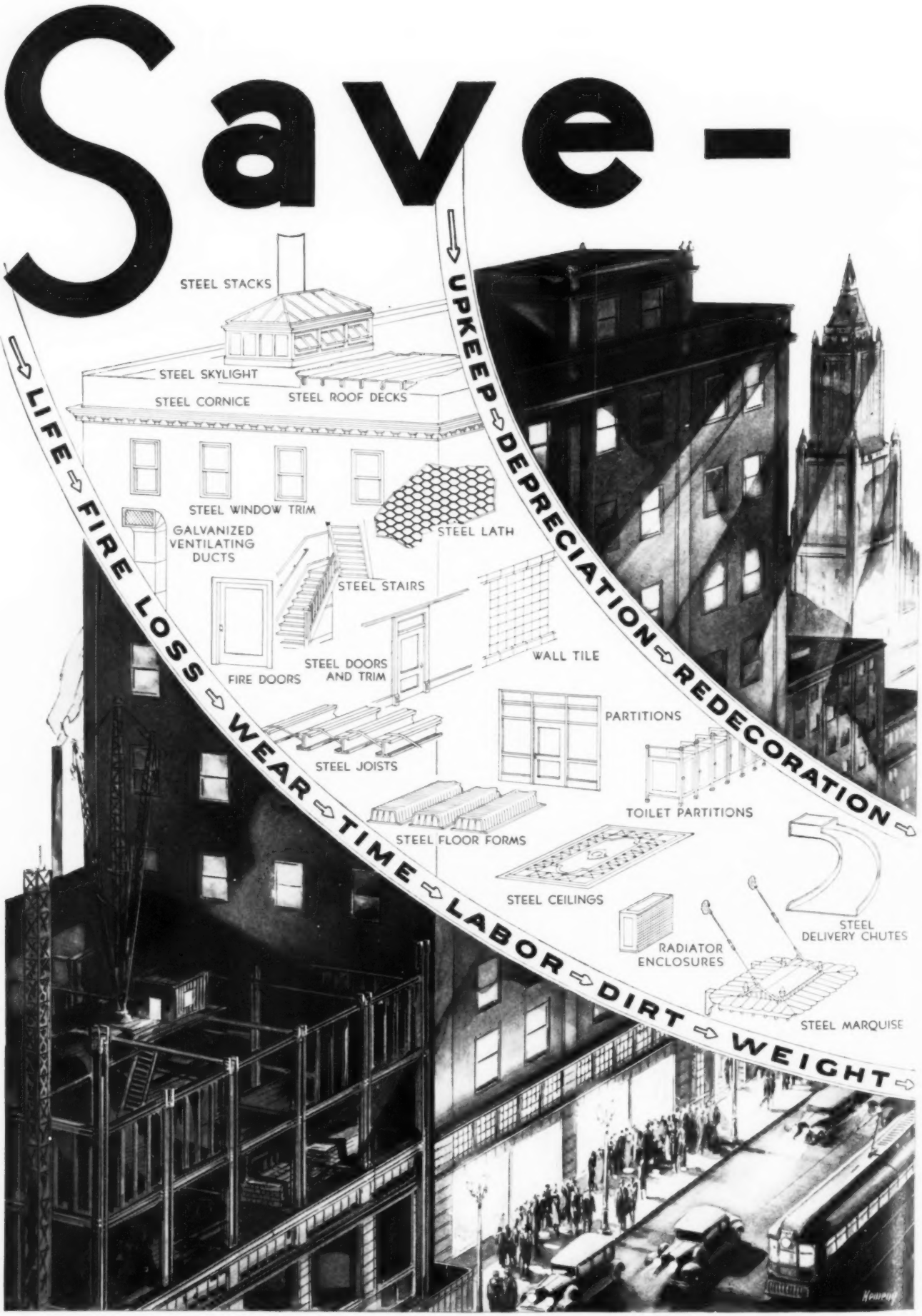


Close-up of Steel Shell and Spiral Reinforcing.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1211 Buildings Burned Today

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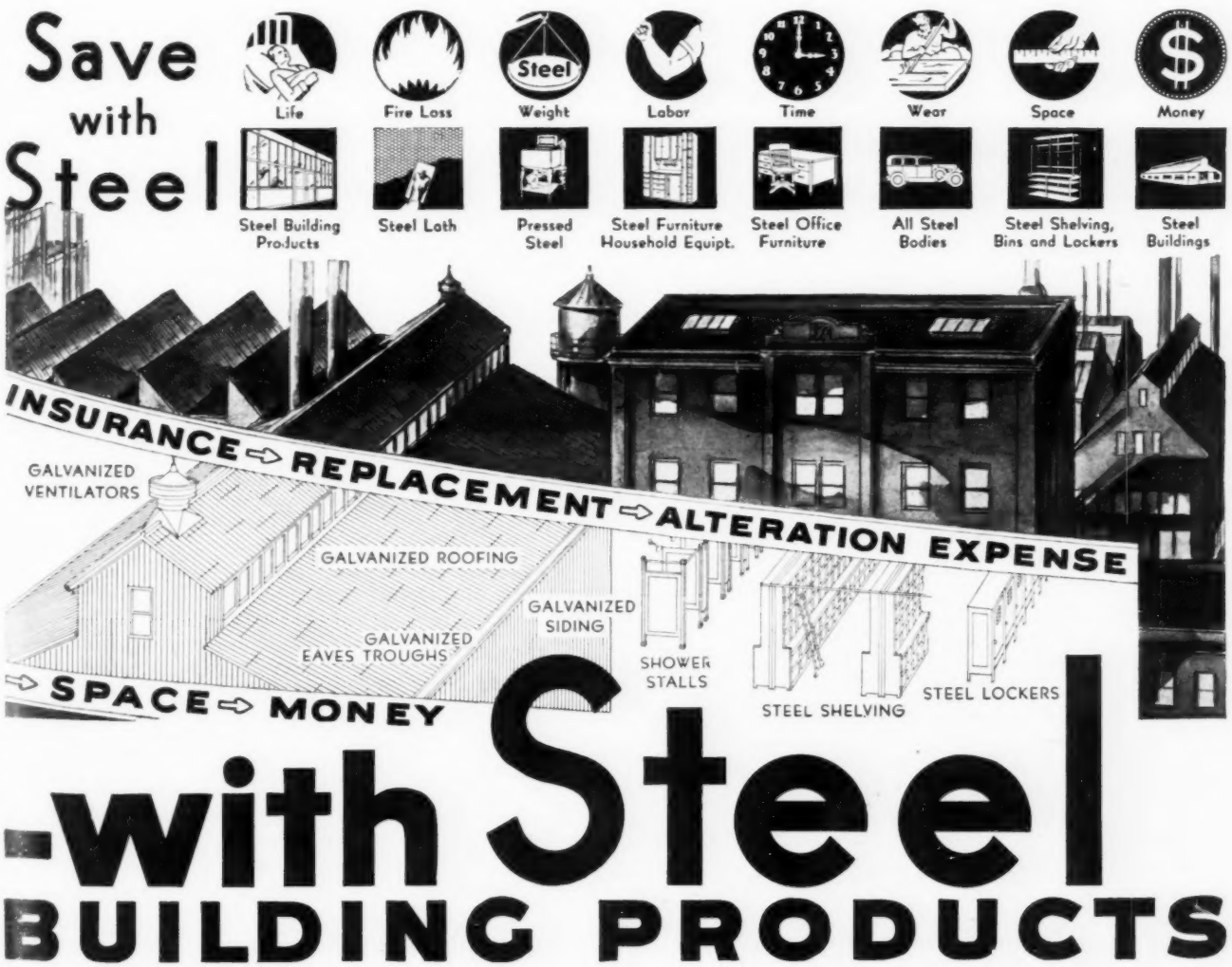
Adaptable to factory, commercial building or home—advancing in artistic design and utility each year—The wider use of steel products will bring about great savings from fire loss, savings of life and money, savings in space, weight, wear, time, labor and dirt.

Complete information concerning these products may be obtained by writing the Trade Research Division, National Association of Flat Rolled Steel Manufacturers, Terminal Tower Building, Cleveland, Ohio.



-with Steel BUILDING PRODUCTS

Voorhees, Gmelin & Walker, Architects *Executed by W. M. Smith*

THE VOGUE SWINGS TO *NATURAL* INTERIORS

ARCHITECTS and interior decorators are using more Tidewater Red Cypress than ever before.

In this versatile wood, which is so famed for its durability, they find a charm of grain that can be found in no other material.

The profession finds it especially suitable for paneling, doors, window frames, base boards, molding, and many other places where a house might be made more beautiful by its exquisite beauty. Tidewater Red Cypress may be used just as it comes from the lumber yard, or it may be waxed, varnished, stained, sand-etched, charred or painted.

A BOOK OF INTERIORS—SENT FREE. Photographs of rooms designed by many famous architects have been assembled in an interesting book which will be sent to you free of charge, if you will write to the Southern Cypress Manufacturers' Association, Jacksonville, Florida.

TIDEWATER RED CYPRESS

d'Humy Motoramp Garage and Office Building Combined

. . . a utilization of lower floors which solves a vexatious economic problem.

"1616 Walnut Street", Philadelphia, Pa.

Tilden, Register & Pepper, Architects

Nineteen stories of office space, surmounting five garage floors—24 floors total. the Walnut Street Frontage on the garage floors is planned for offices 31 feet deep. The automobile entrance is on the rear street. d'Humy Motoramps provide cost-free interfloor transportation.

THE increasing difficulty of securing profitable rental of the lower floors (particularly the interior area) of a tall office building has long engaged the thought of architects.

To plan garage and office building *combined* offers an ideal solution. Inexpensive garage-type construction for the lower floors (except possibly retaining office space for the street frontage) lessens the total investment and will produce revenue in as favorable ratio as the surmounting office building space. And it locates the garage where its capacity utilization is assured.

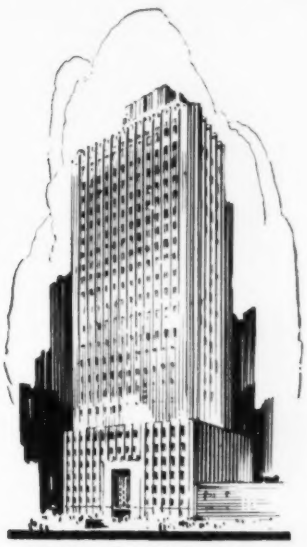
This general plan capitalizes the economic and operating advantages of the d'Humy Motoramp type garage on mid-city locations.

How the d'Humy Motoramp design adapts itself is demonstrated in a series of typical buildings in our "Combination Building Sketches" which we will be glad to send you. Shall we do so?

RAMP BUILDINGS CORPORATION

Garage Engineers

21 East 40th Street, New York, N.Y.



"450 Sutter Street" in San Francisco is another notable example.

160

PRIVACY and QUIET with DIGNITY

A PRIVATE office must provide these three features or it ceases to be a private office. Sanymetal Partitions supply all three and in addition beauty, utility and movability. Should expansion plans or a desire to change arrangements arise, Sanymetal Partitions may be moved, rearranged with 100% salvage.

Architects appreciate the ease with which Sanymetal Office Partitions accommodate wiring systems; their insulation against noise; their fire-safe construction; their beautiful permanent baked enamel finishes.

In the planning of new office structures or in the remodeling of old, architects will find the cooperation of Sanymetal engineers decidedly helpful. You may consult them without obligation.

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The complete line of Sanymetal Products covers office partitions, factory partitions, toilet, shower and dressing compartments, hospital cubicles and metal costumers. We shall be glad to send you details on new and interesting designs of any of these products.

THIS is an air-eye view of any city, showing hundreds of Carey Built-up Roofs—on schools, institutions, industrial buildings, apartments and residences. In any city, there is a Carey service representative, ready to tell you about the Carey roofing specifications that *fit* the building you are designing. And, in any and every city, architects know that the building with the Carey roof—*the gold bond roof*—wears *plus-quality* protection.

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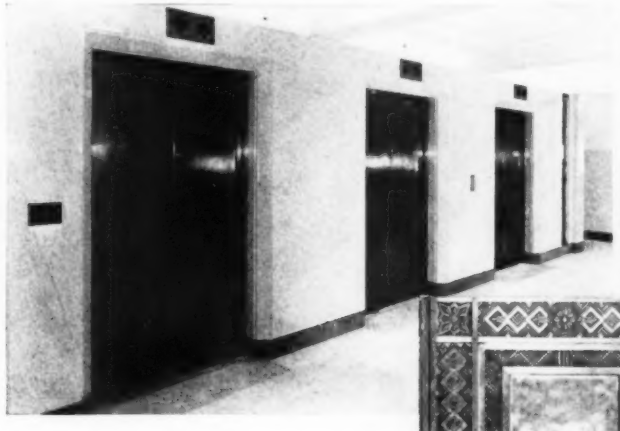
BUILT-UP ROOFS
"A ROOF FOR EVERY BUILDING"

New 35-Story Skyscraper . . .
equipped with Art Metal



EASY TO OPERATE . . . SPEEDILY EFFICIENT. *210 of these Art Metal steel elevator doors equip this 35-story structure. All of these units are bi-parting and pneumatically controlled.*

6 DISTINCTIVE FEATURES *of the main foyer of the David Stott Building are the cast bronze elevator units by Art Metal.*

CLEARNESS AND INDIVIDUAL INTEREST *of each panel show the ability of the Art Metal artisan to execute fine bronze work of the most minute detail.*

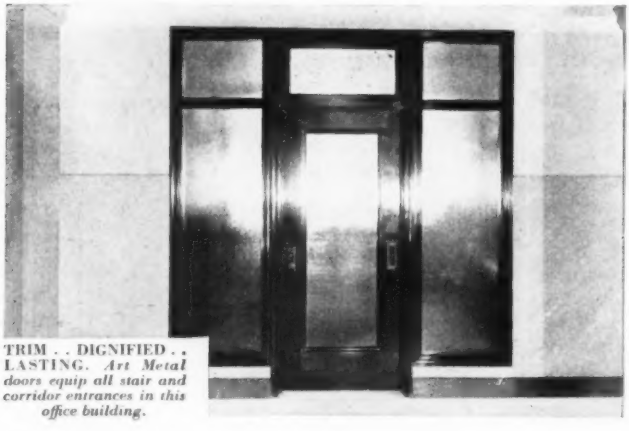
All elevator, stair, and corridor doors in new David Stott Building, in Detroit, installed by Art Metal

LOOK at these photographs! They picture the reason why Art Metal received this 578-door contract. Each one shows how the opportunity for good metal work in the David Stott Building was made use of . . . the ability of the Art Metal craftsmen to reproduce faithfully the architect's design.

For over 41 years Art Metal has been producing the finest bronze and steel equipment for banks, libraries, and public buildings. The largest metal equipment job in the world is the Art Metal installation in the Free Library of Philadelphia. Every department of the Chase National Bank is Art Metal equipped. Outstanding examples of craftsmanship.

When you specify Art Metal you gain the advantage of this seasoned experience expressed in ageless steel and bronze. Your designs receive a concrete interpretation. Your contract, no matter how diversified, is promptly filled through the able facilities of the Art Metal organization.

Write NOW. A letter brings a representative qualified to consult with you on any installation, large or small. There is no obligation. Art Metal Construction Company, Jamestown, New York.

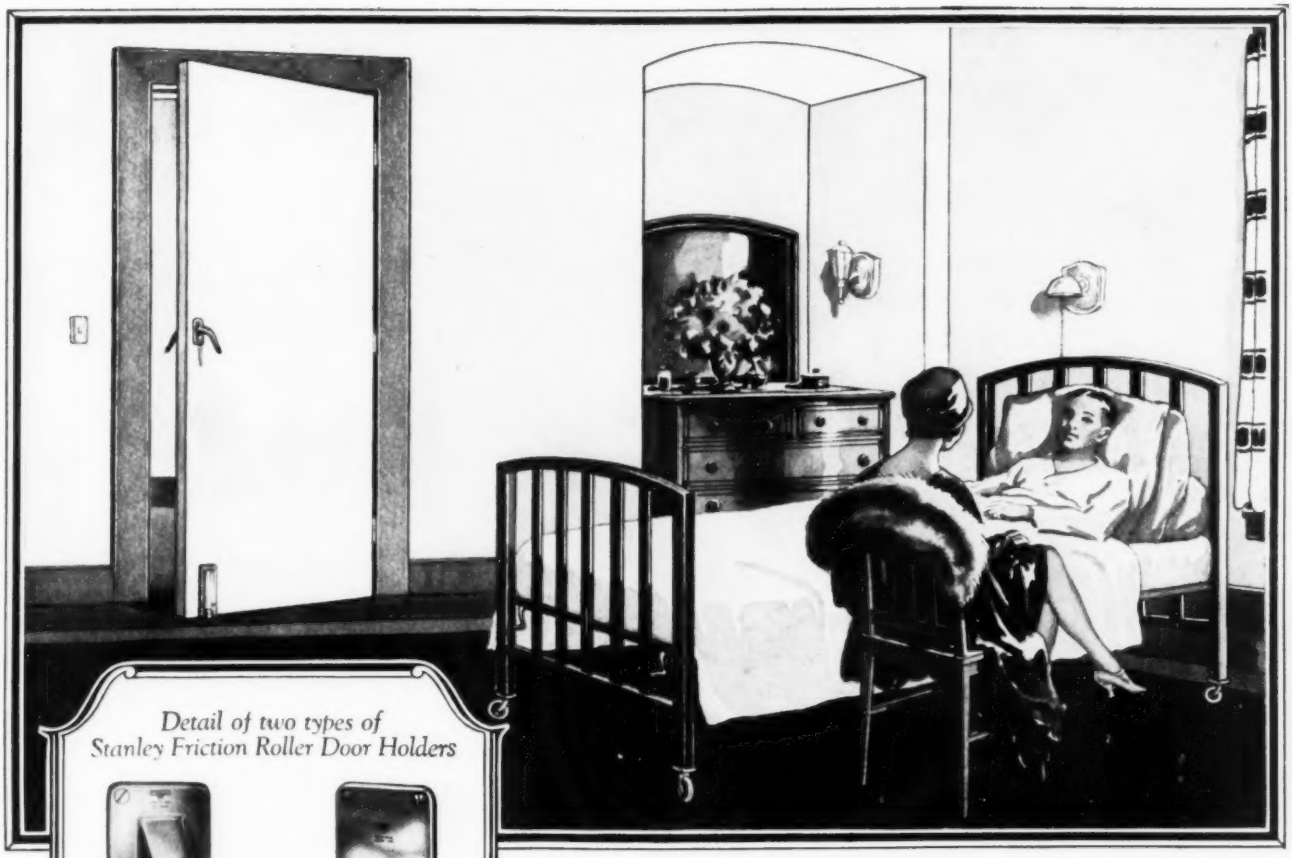


TRIM . . DIGNIFIED . . LASTING. *Art Metal doors equip all stair and corridor entrances in this office building.*

Art Metal

JAMESTOWN ~ NEW YORK

BRONZE AND STEEL INTERIOR EQUIPMENT FOR BANKS, LIBRARIES AND PUBLIC BUILDINGS . . . HOLLOW METAL DOORS AND TRIM



Detail of two types of Stanley Friction Roller Door Holders

Surface Type
No. 453

Recommended for doors now in use, lacking means of door control.

Mortise Type
No. 454

Recommended for new construction.

Features

Silent Operation
Easily applied
Easily operated
Long wearing
Requires no adjustment
Economical

Operation

As the door is moved back and forth the rubber friction roller rolls along the floor. The friction of the roller itself holds the door in any position and prevents it from slamming. Roller is mounted on a slide working against a spring, this maintains a non-varying pressure on floor and takes care of any irregularities in the floor surface. The door holder places no strain on the hinges.

Both types are enclosed in polished bronze or brass cases and can be supplied in any finish to match the hardware trim.

Perfect Door Control Increases the Comfort of the Patient

The new Stanley Friction Roller Door Holder for Hospital Doors

holds the door in any position, prevents the door from slamming, gives the patient the comfort of a partly open door day or night. Allows the door to stand ajar for ventilation and at the same time insures privacy.

A simple and economical mechanism which adds greatly to the comfort of the patient through silent, positive door control.

Complete description upon request.

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AUTHENTIC PLASTER ORNAMENT

McKIM, MEAD and WHITE, *Architects*

Pompeian Court

executed by Jacobson
in the Metropolitan Museum of Art, New York

CONSTANTLY it is the privilege of Jacobson to undertake the creation of plaster effects which call for a superlative technique. The Pompeian Court in the Metropolitan Museum of Art, New York, pictured above, is an outstanding example of the sort of work of this kind which we have undertaken in the last few years.

The illustration above is not shown with the idea of establishing the quality of Jacobson work, for it is impossible to make evident in a photograph, no matter how detailed, the infinite care and pains devoted to meeting the most exacting specifications.

Architects and decorators in all parts of the country are enabled to make use of Jacobson craftsmanship through their catalogues of plaster ornament. The new catalogue, comprising 3,109 new designs never before published, is now ready for distribution to recognized architects and decorators. If you have not already done so, please write to make sure that your copy is forwarded promptly.

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SPECIALISTS IN MOTOR OPERATED
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OF STEEL MILLS AND
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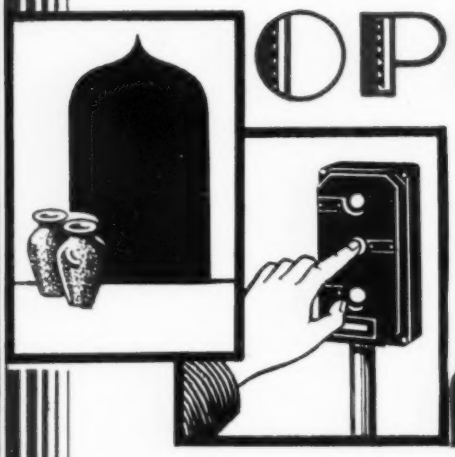

AT the touch of a finger would you open or close a door, raise or lower a show window, curtain, stage, orchestra pit or gallery? Would you remove a partition, transform a skating rink into a dance floor or prize ring? Would you change a store entrance into a show window, turn a building to face the sun, a hangar to tail the wind?

These are engineering problems in which we specialize, undertaking the detailed design, construction and erection directly with and for the architect.

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CAMBRIDGE, MASSACHUSETTS

"As clean in the basement as it is in the picture"

Bryant Gas Heating is a dependable guardian of an architect's conception and execution. If the basement is decorated for living purposes, no soot, drippings, dust or grime from furnace room, storage bin or tank play havoc with the investment. No vapor, odors, soot or dust penetrate to upper floors to tarnish paint and varnish or damage hangings and upholstery. The original beauty is protected and preserved. No fuel trucks damage lawns or shrubbery. No furnace men or parade of service mechanics need be taken into consideration. ¶ Each of these points is as important to your client as to you.

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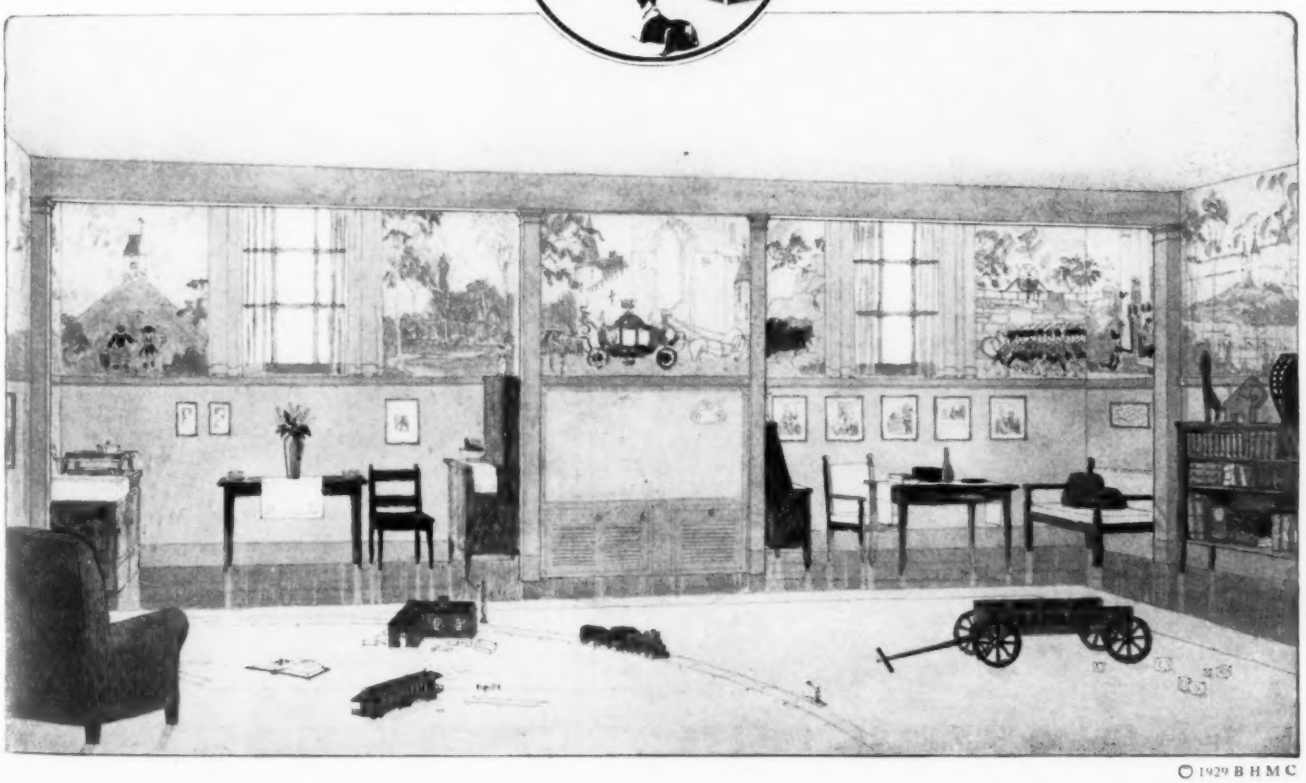
An inexpensive handling of a charming basement play-room is shown below. The "extras" are limited to integral hardening and coloring of the concrete floor, the wall treatment and the Compo board enclosure above the boiler.

Exactly the same floor plan could be used for an adult recreation room, the two alcoves becoming card rooms with permanent tables always ready for use.



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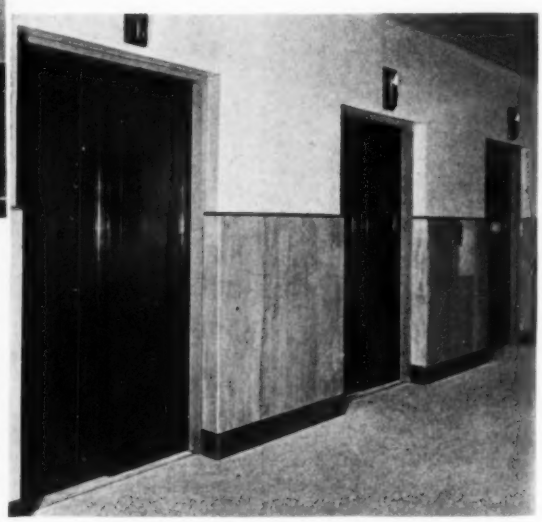
This intelligent skill is at your service

EVERY man in the Thorp organization, from the executives on down, is keenly aware of his individual responsibility to meet the sometimes exacting requirements of the architect. This state of mind produces not only a high order of skill, but quickens the intelligence. We believe that this attitude is worth a great deal. Architects that continually specify Thorp Doors have learned to be complacent about the result, knowing that their intentions will be intelligently met and skilfully executed in metal.

Architectural details on request—address the home office at Minneapolis, Minnesota.



Minnesota Building, St. Paul—Charles A. Hansler, Architect. Main floor elevator entrances have cast ornamental panels with bronze enamel finish. Upper floor entrances, baked walnut finish. Thorp noiseless continuous guides are, of course, used.

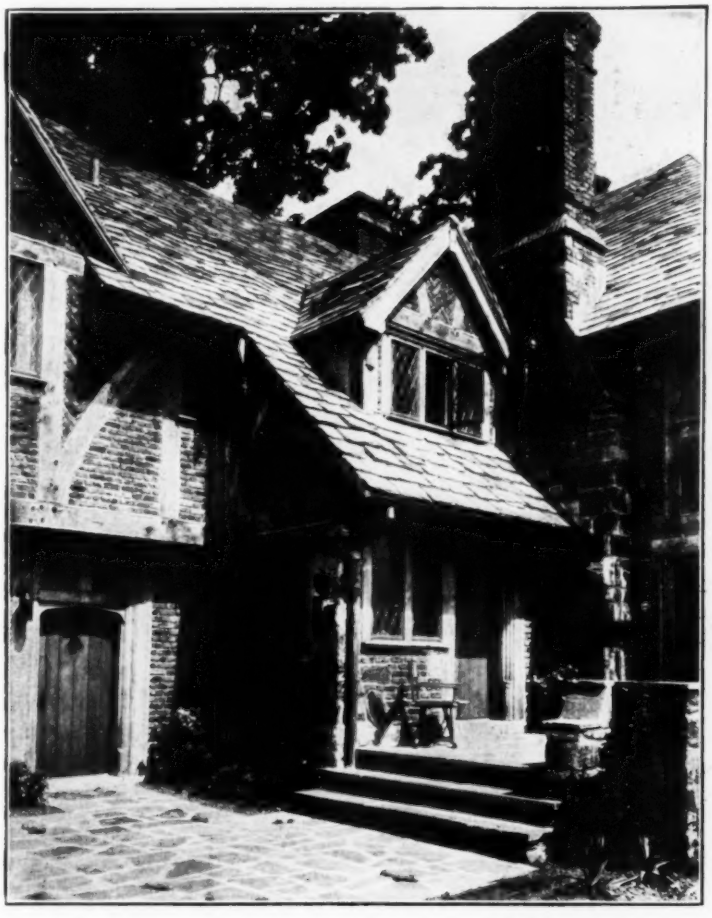
THORP FIRE PROOF DOOR COMPANY

Razor-edges and Snowflakes

Man-made objects lose with magnification; nature's productions show up still better. The keenest razor-edge looks coarse and ragged under the microscope, but the more you magnify a snowflake the more beautiful it becomes.

Sheldon's slate is nature's product. No artificiality appears, no matter how close you come. Like the snowflake, it can stand the microscope, so to speak.

That's why this corner of that peaceful residence we showed you last month: a close-up in which nature's beauty is enhanced.



Which leads us to reflect that a Sheldon slate roof is "a roof of eternal beauty," whether viewed from afar or from nearby.

To refresh your memory, this peaceful nook occurs in the residence of George G. Sicard, Larchmont, New York.

John Russell Pope, Architect.

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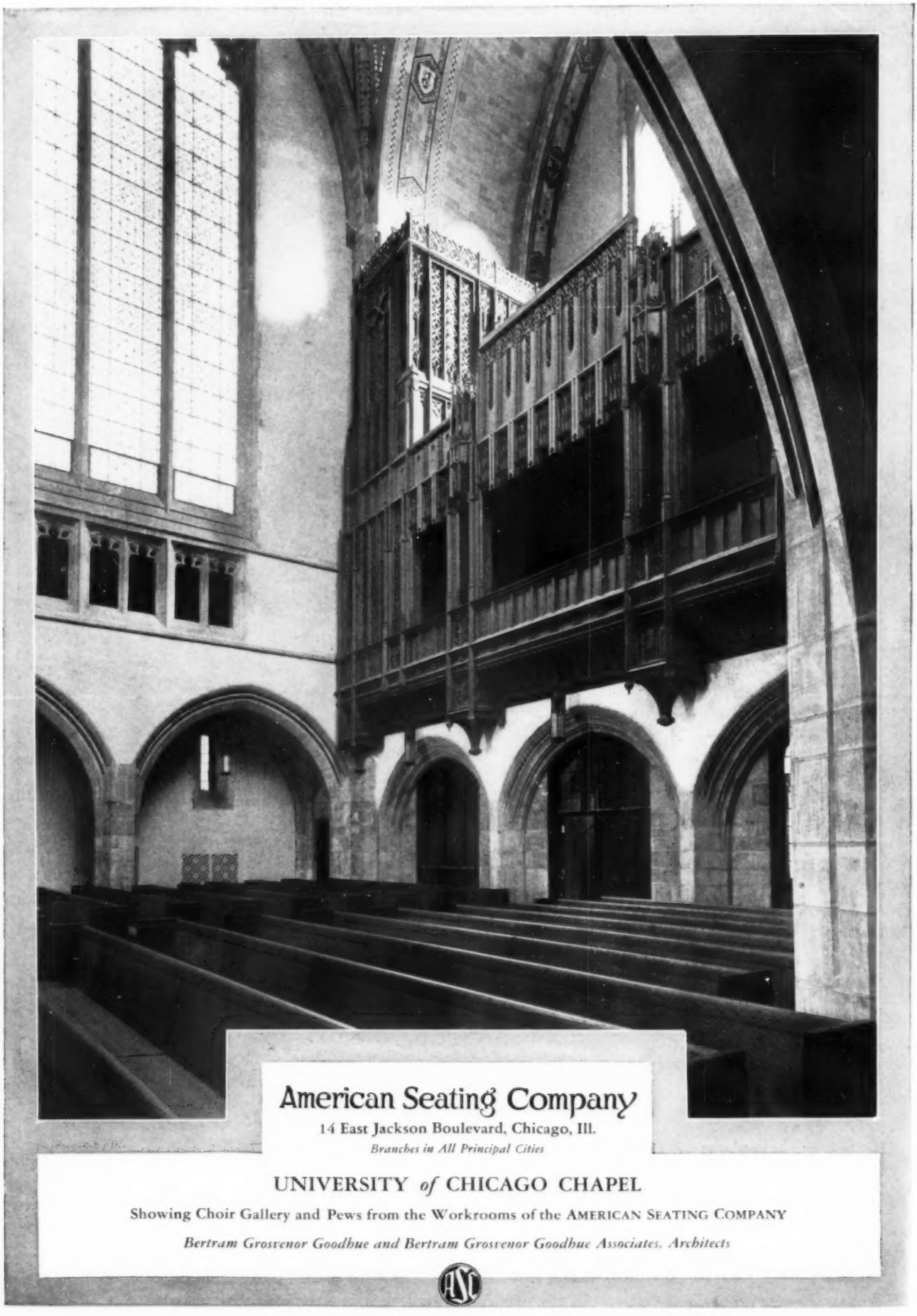

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Great-grandfather

Paul Revere

founded this business

THE PIONEER OF THE COPPER INDUSTRY

History dramatizes Paul Revere as a daring, horseback patriot, who in spare time wrought exquisite silver bowls. In Canton, Mass., are relics of a lesser known Paul Revere, pioneer in copper rolling, founder of a great American industry.

Here in 1801, Paul Revere built America's first copper-rolling mill and rolled America's first copper sheet. His original Revere & Son (later Revere Copper Co.) was handed down to son, grandson, great-grandson.

✣

A FAR-REACHING CONSOLIDATION

Last year came an important consolidation in American industry. Six successful companies joined as one . . . Baltimore Copper Mills, Dallas Brass & Copper Co., Higgins Brass & Manufacturing Co., Michigan Copper & Brass Co., Rome Brass & Copper Co., Taunton-New Bedford Copper Co. Their six plants high-spot the entire industrial area from Boston to Baltimore to Chicago. Their six units, with their specialties, combine to make a complete service in copper, brass and bronze. A natural consolidation!

In the Taunton-New Bedford unit, of which Edward H. R. Revere is Chairman, was the original Revere Copper Company founded in 1801.

So to perpetuate the name Revere in the industry and in the very business which Paul Revere founded, the name of this consolidated group now becomes: REVERE COPPER AND BRASS INCORPORATED.

Revere Copper *and* Brass

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Divisions: **Baltimore** *Copper Mills, Baltimore, Md.* . . **Dallas** *Brass & Copper Co., Chicago, Ill.* . . **Higgins** *Brass & Manufacturing Co., Detroit, Mich.* . . **Michigan** *Copper and Brass Co., Detroit, Mich.* . . **Rome** *Brass & Copper Co., Rome, N. Y.* . . **Taunton-New Bedford** *Copper Co., Taunton, Mass.*

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View of "Our Lady of Angels" School, Reservoir Avenue, Bronx, New York, executed in BATES SEAM-FACE GRANITE. The architect was Thomas F. Dunn and the builders Frank A. O'Hare Company.

BATES SEAM-FACE GRANITE in rift, grain and texture is extremely favorable to economic working—a condition reflected in its cost, and enhanced by large-scale production with resultant savings to the purchaser. It is distinguished by a low coefficient of absorption and, by the flame test, shows up as one of the best of granites as regards scaling and cracking. We supply Split-Face as well as Seam-Face, and the colors range from deep browns and reds to light greens and greys, with intermediate tones of yellow, buff and orange. Our facilities for production and dressing are unusual, assuring prompt delivery regardless of quantity. We are represented in Sweet's Architectural Catalogues

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Quincy, Massachusetts

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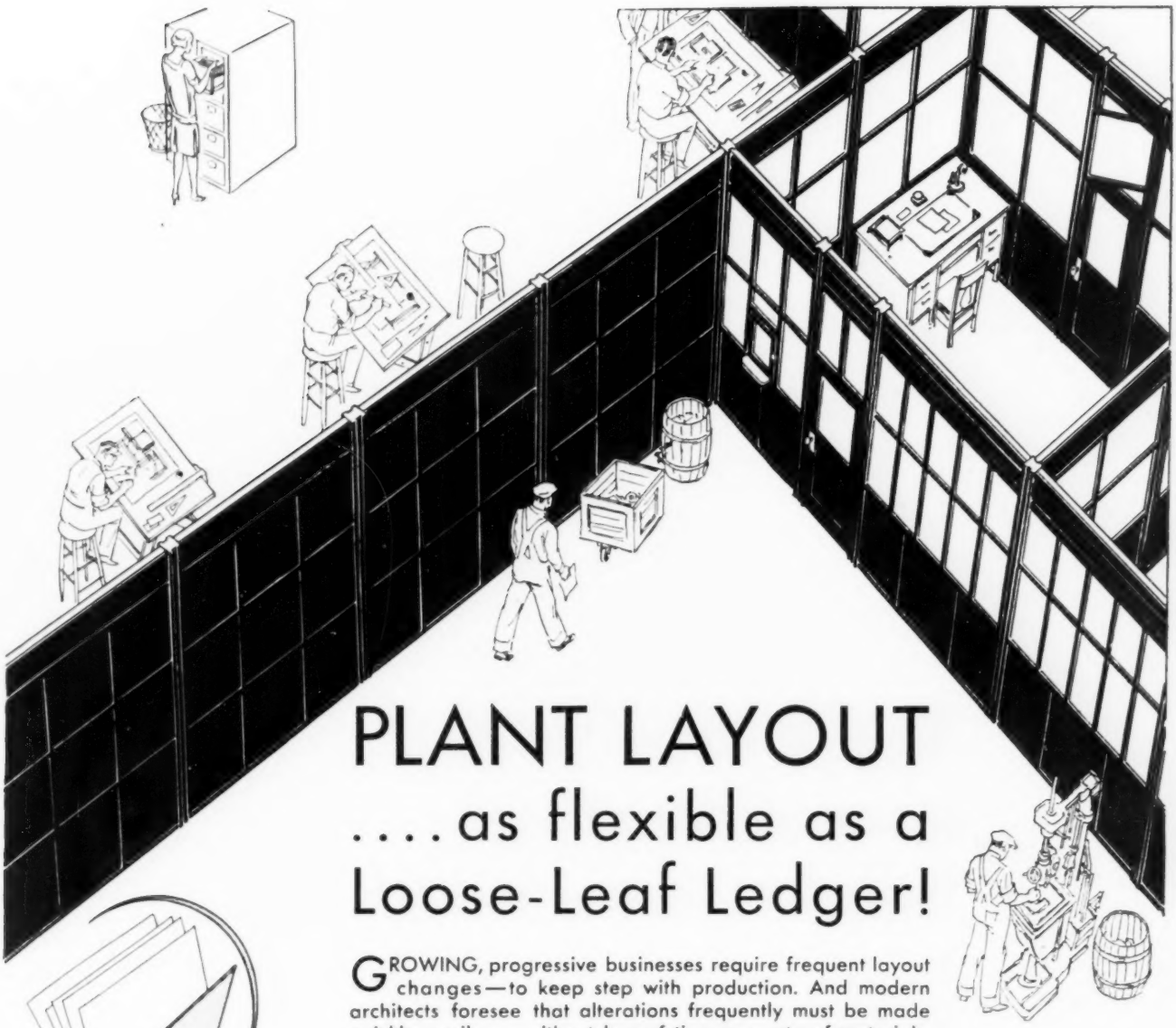

PLANT LAYOUT
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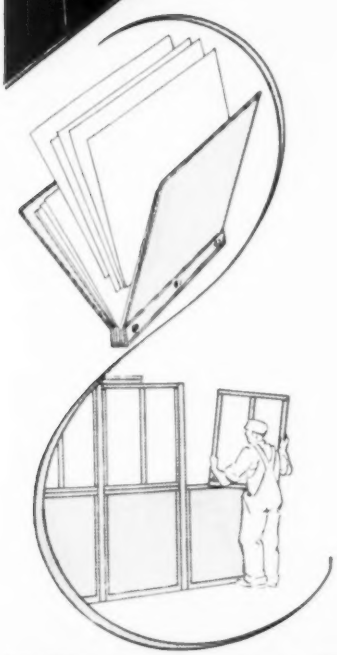
GROWING, progressive businesses require frequent layout changes—to keep step with production. And modern architects foresee that alterations frequently must be made quickly, easily . . . without loss of time or waste of materials.

Immovable walls for interior plant construction have failed repeatedly to satisfy the changing needs of industry. Only 100% movable steel partitions meet today's demands for utmost flexibility.

Whether you're working on changes in a present plant or designing a new factory, just remember this: that your clients' interests—both present and future—will best be served by equipping their buildings with Hauserman Movable Steel Partitions.

Thousands of industrial installations in leading plants of the country have shown the immense value to industry of steel partitions. Impressive list of nationally known users will be furnished upon request.



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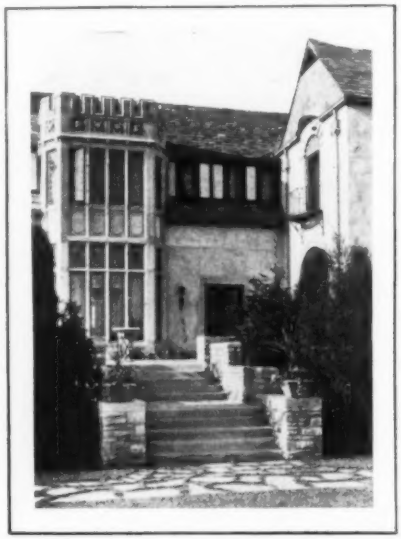
Concrete Masonry Construction Makes Fine Homes Firesafe

IT IS easy to understand why an ever-increasing number of fine homes are being built with concrete masonry walls and concrete floors. This type of construction not only assures utmost durability and strength, but—of even greater importance to the owner of every fine home—*Firesafety!*

Here is complete protection for your investment in the home itself, and its furnishings. Rare libraries that can never be replaced, costly rugs and tapestries, prized trophies and mementos of earlier years—for the loss of these no insurance can adequately compensate. They must be *safeguarded* from fire.

Then, too, there's the peace of mind which firesafety creates — entire freedom from anxiety. Fires that originate in the basement—and many of them do—are completely isolated from living quarters by a concrete first floor. Loved ones are assured utmost protection.

Residence of Col. Edwin S. George, Bloomfield Hills (Detroit), Michigan. Geo. D. Mason & Co., Detroit, Architects. I. J. Isgrigg, Pontiac, Michigan, Builders.

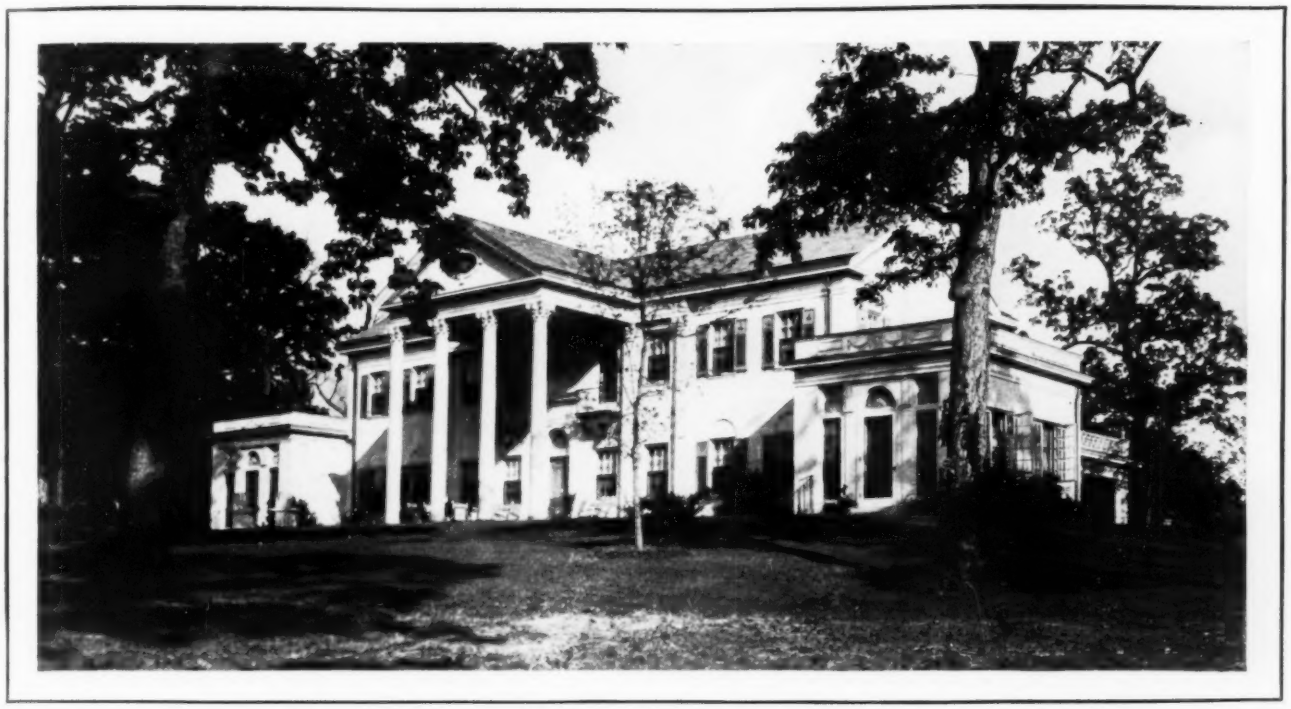


Another view of the Col. George home. Walls are largely of concrete masonry. Exterior is of portland cement stucco, brick, and stone trim. With reinforced concrete floors throughout, this residence is as nearly firesafe as it can be built. It replaces one destroyed by fire.

Another feature of this modern construction is its resistance to extremes of heat and cold. A concrete masonry wall (built of *hollow* concrete units) is virtually *two* walls, with insulating air space between outer and inner surfaces. Homes thus protected may be kept delightfully cool on summer's hottest days. With a smaller expenditure for fuel than is customary, they may be kept comfortably cozy in the zero cold of winter.

PORTLAND CEMENT

CONCRETE FOR PERMANENCE



Residence of P. D. Houston, Bellemeade (Nashville), Tennessee. Biglow & Henthorn, Architects. Rock City Construction Co., Builders.

When to these qualities are added the strength and remarkable durability of concrete masonry, its ever-increasing use in the construction of fine homes and country estates is simply a matter of course.

During recent years the manufacture of concrete masonry units has been developed with particular regard for the needs of home building. These units are made by mixing portland cement with water and other suitable materials such as sand, pebbles, crushed stone, cinders, burned shale, or slag. Necessary standards of size and quality are everywhere carefully maintained.

When reasonable skill and care are exercised in mixing the cement mortar and laying the units, a wall of great strength and stability—of *virtually one-piece construction*—is the result. Portland cement stucco, when used as an exterior finish, bonds perfectly to concrete masonry walls. Coating and base become one.

This stability and permanence of concrete masonry; the distinctive exteriors made possible with the varied textures and color tones available in portland cement stucco; the beauty of concrete floors, treated in any one of many charming ways—these are matters of the greatest interest and importance to every fine home builder.

Before you plan your home, become familiar with this modern construction material. Let us send you complete and handsomely illustrated literature on the subject.

The Houston home has concrete masonry walls throughout, with white portland cement stucco exterior. Reinforced concrete floor above basement, which extends under a part of the home only.

A S S O C I A T I O N *Chicago*

. . . AND FIRESAFETY

An International Masterpiece

The New Cuban Capitol, Havana—Designed by Eugenio Rayneri, Director Tenico y Artistico, Republic of Cuba—Built by Purdy & Henderson Co., Havana—and now being plastered by Waring & Gillon, London, England, with Ohio White Finish from Woodville, Ohio

ARCHITECT, general contractor and plasterer are working hand in hand to make the interior of this imposing structure express the spirit and the aspirations of a youthful, hopeful, ambitious New World Republic.

And for plaster plastic enough to receive texture treatment—to accept and make permanent the ornate decorations—they came to Woodville for the original Ohio White Finish, made from the world's finest and purest known deposit of dolomite rock.

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CARBIDE & CARBON BUILDING
CHICAGO

Burnham Bros., Inc., Architects
Joseph Kaszab, Cabinet Contractor

CONSPICUOUS by reason of its graceful, sky-pointing tower, the new Carbide & Carbon Building rises majestically at the southwest corner of Michigan Avenue and East South Water Street, Chicago. The exterior, too, gives hint of a fine interior — the trim of which is enhanced and permanently protected through the use of Pratt & Lambert Varnish Products — notably "38" Preservative Varnish.

"38" is a time-tested varnish for all high-grade interior trim. It brings out the natural beauty of the wood and preserves it indefinitely. "38" Preservative Varnish is not affected by hot or cold water, will not crack, blister or turn white.

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STEP by step Southern Pine Association mills have led in the development of perfected manufacturing methods, to meet the needs of the lumber trade.

Uniform grades, supervision of grading at the mill, grade marking, and NOW . . . For each grade a guaranteed maximum moisture content.

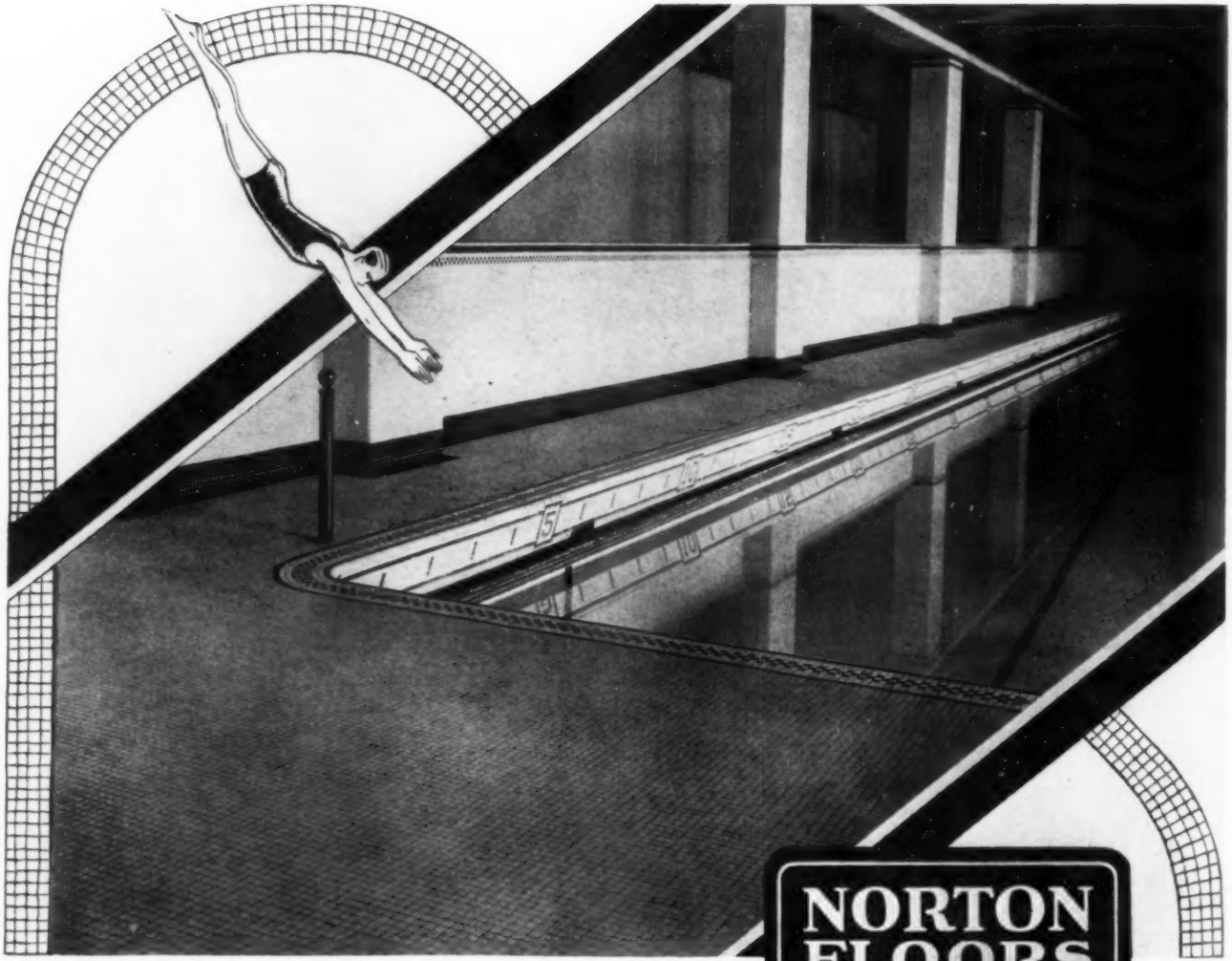
These moisture content limitations now apply to all standard grades of Southern Pine lumber. Excessive moisture is now a defect, just as checks and knots.

Require the official grade mark. It is your guarantee of good lumber, correctly manufactured, properly dried and accurately graded . . . lumber that has been brought from the "Wilderness of Doubt" by the progressive activity of Southern Pine Association mills.

Have you received your copy of the Moisture Content booklet? One is waiting for you. Send for it today.

Southern Pine Association

NEW ORLEANS



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Permanently Non-Slip

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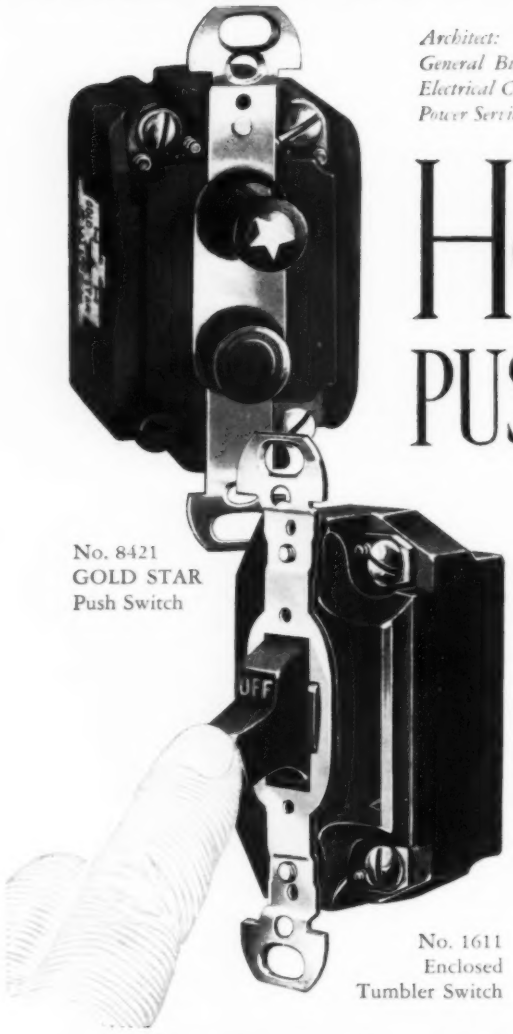

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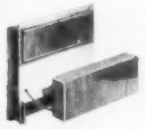

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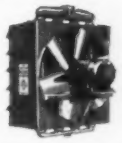

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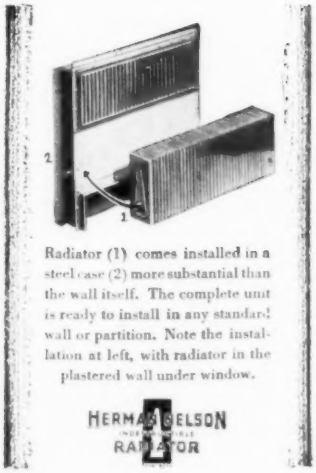

Radiator (1) comes installed in a steel case (2) more substantial than the wall itself. The complete unit is ready to install in any standard wall or partition. Note the installation at left, with radiator in the plastered wall under window.

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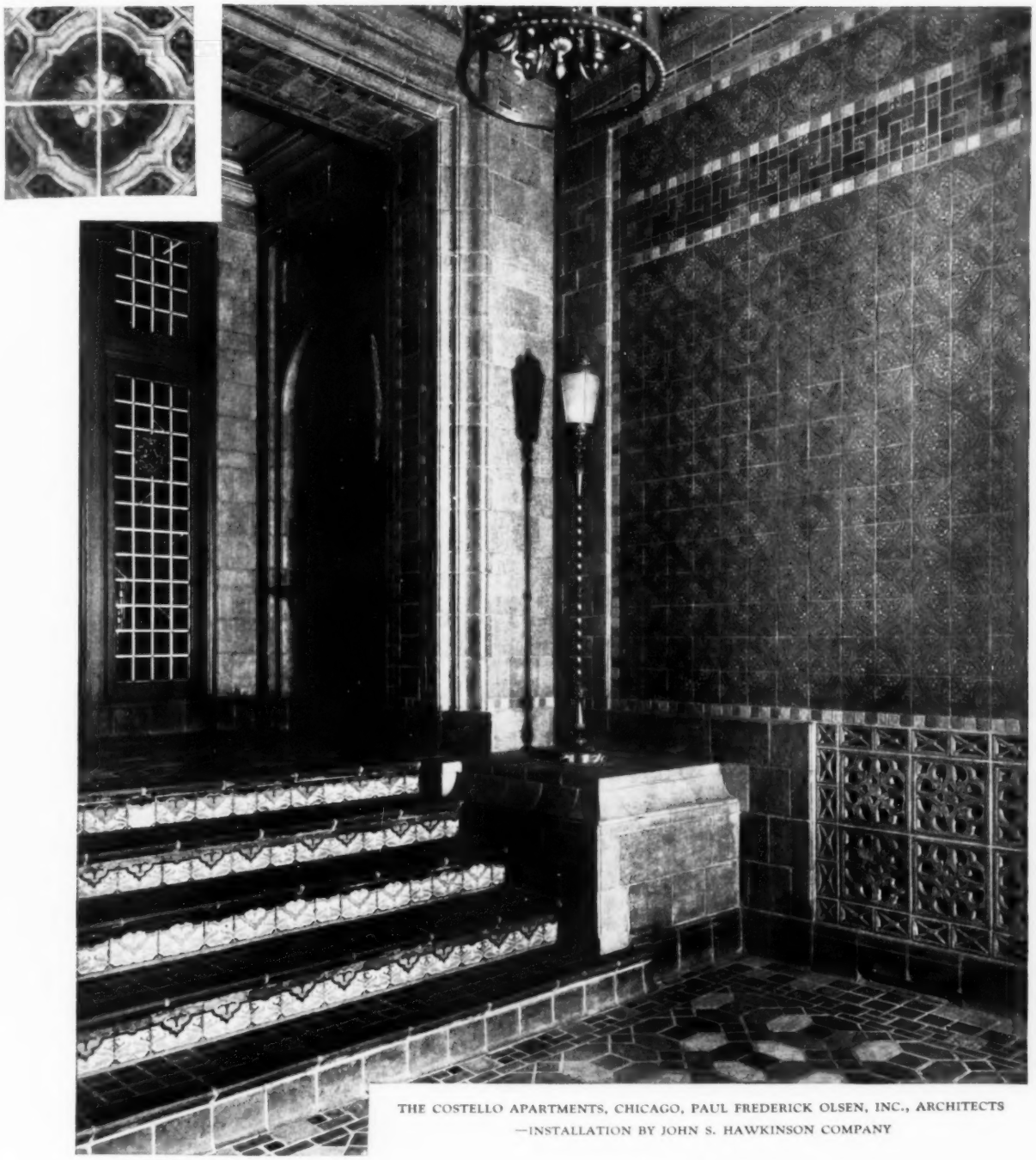

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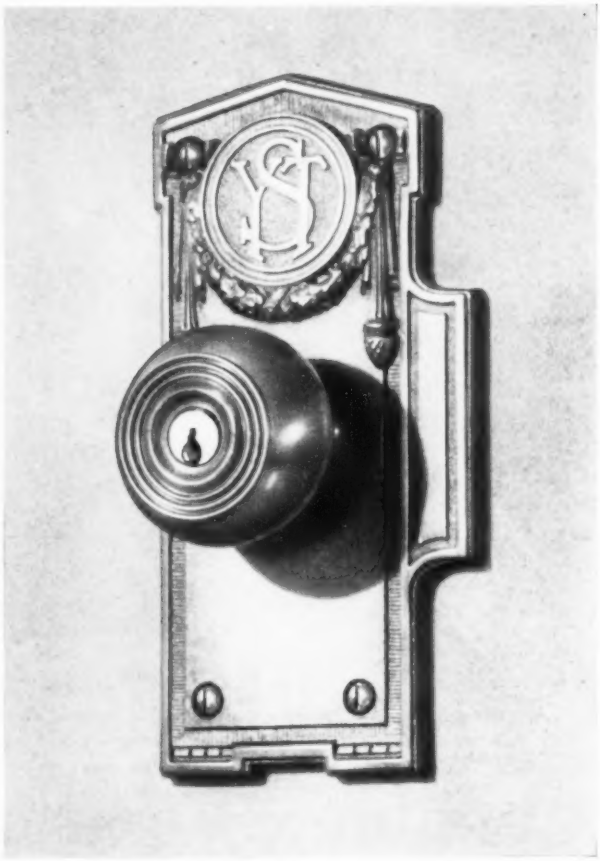

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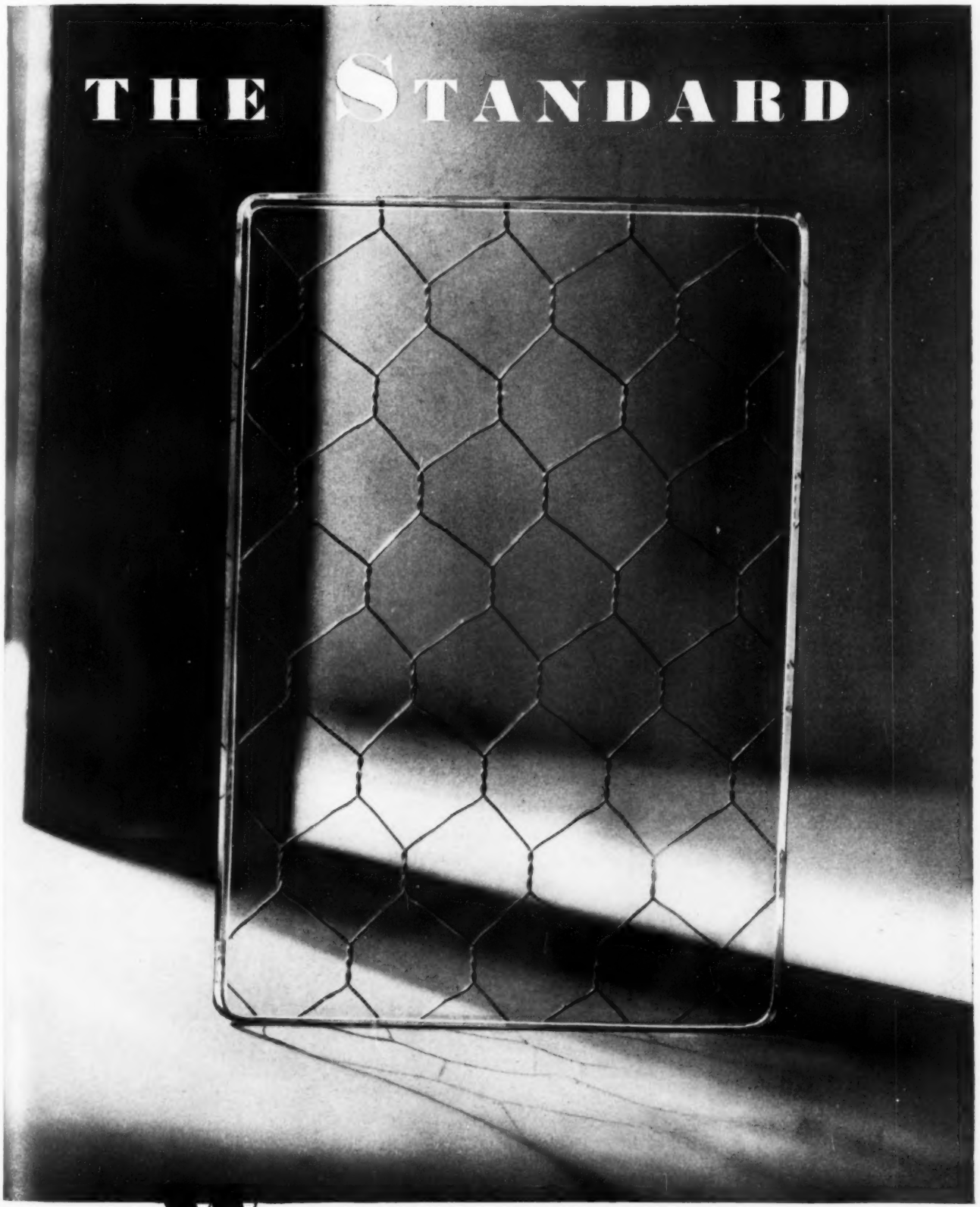

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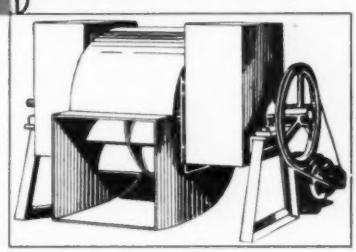

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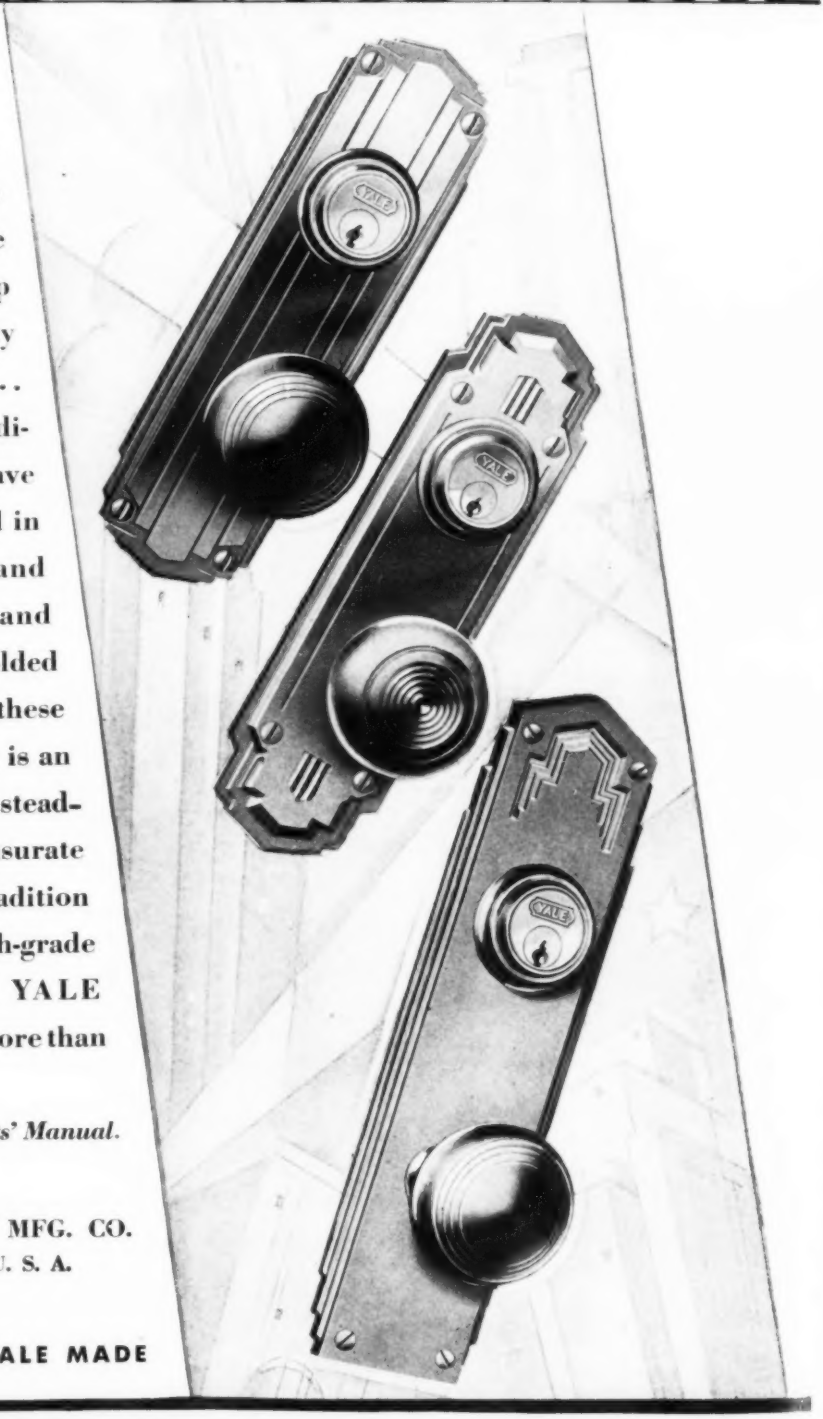

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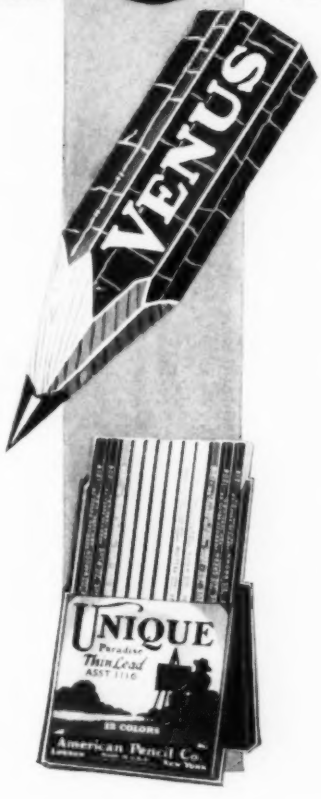

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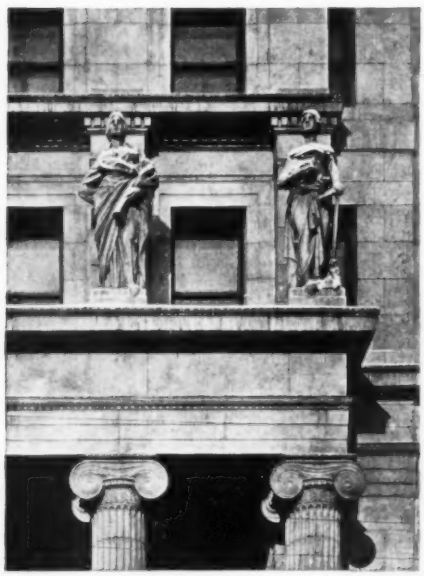

Detail of facade of the old building of The Royal Bank of Canada, Montreal. Now occupied by the Banque Provinciale du Canada; Howard Colton Stone, *Architect.*

This photograph, taken in the winter, shows a deposit of snow on the carved figures.

The Royal Bank of Canada
INCORPORATED 1869
Head Office

Montreal, August 13, 1929

S. M. Gross, Esq.,
C/o The May Company,
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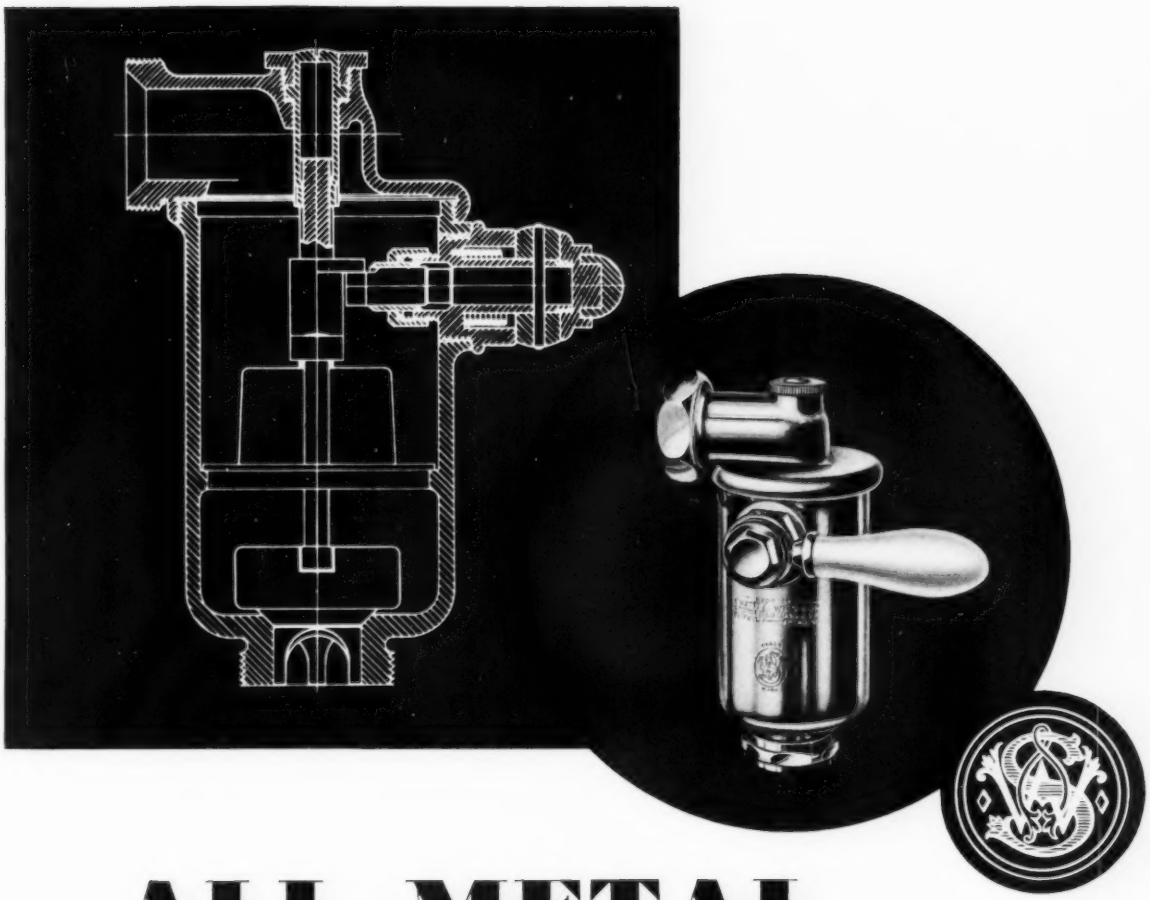

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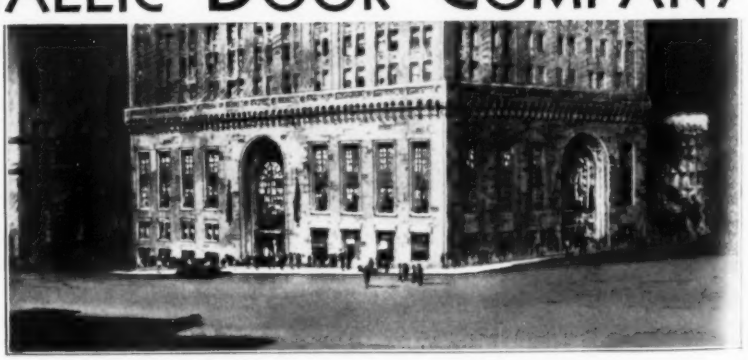
NEW YORK, CHICAGO, LOS ANGELES, DETROIT, DALLAS



In the Baltimore Trust Building, Baltimore, Maryland, the Elevator Entrances are by Dahlstrom. Architects: Taylor & Fisher, Baltimore, Md. Assoc. Architects: Smith & May, Baltimore, Md. Contractors: J. Henry Miller & Son, Baltimore, Md.

Pump rating *merely* in sq. ft.
may prove a boomerang . . .

To Insure Heating Pump Performance

tested air and water capacities should substantiate published ratings

CONDENSATE to be removed from a return line vacuum heating system may vary in volume as much as 40%. Quantity of air or vapor also fluctuates widely. For this reason, square feet of installed radiation is not the only factor to consider in choosing the correct size of pump to use. Several others must be recognized. Pressure in the system, efficiency of traps, tightness of joints, fittings and valves cannot be overlooked.

So, every Jennings Vacuum Heating Pump is rated by guaranteed air and water capacity determined by actual test. For a specified amount of radiation, a given size of Jennings Pump is recommended only if its combined air and water capacity is proved adequate to handle this radiation under all conditions. A Jennings Pump with the air and water capacities given in the table can be relied on to serve satisfactorily any reasonably well installed system for the life of the building.

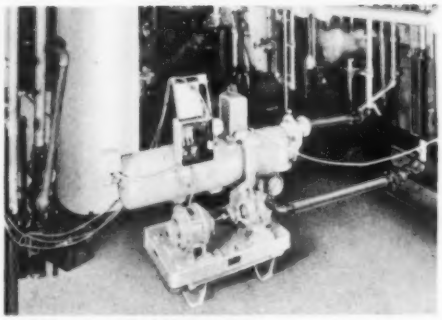
Actual Tests Determine Jennings Pump Capacity

Air and water capacities are accurately measured. The pump is tested with its own motor and control equipment. The entire assembly is made to prove its fitness for the work which it has to perform. A certified report of the test is furnished to the purchaser.

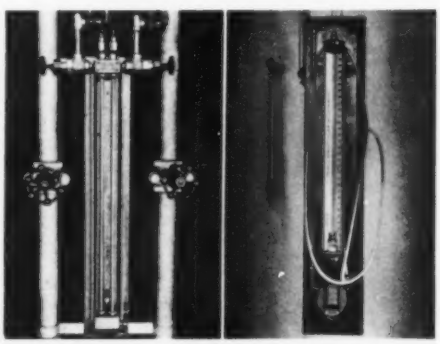
CAPACITIES OF
JENNINGS VACUUM HEATING PUMPS

Pump Size	Equivalent Direct Radiation Square Feet	Water Capacity G.P.M.	Air Capacity Cu. Ft. Per Min.	Orifice Diameter Inches	MOTOR HORSEPOWER			
					10 Lbs.	20 Lbs.	30 Lbs.	40 Lbs.
T	2,500	4	3	7/64	1/3	1/2	1	1 1/2
U	5,000	9	3	7/64	1/3	1/2	1	1 1/2
V	10,000	14	6	5/32	1	1	1 1/2	2
B	16,000	22	9	3/16	1 1/2	2	3	5
C	26,000	35	15	1/4	2	3	5	5
D	40,000	60	19	5/32	3	5	5	7 1/2
E	65,000	90	34	3/8	5	5	7 1/2	10
F	100,000	140	50	7/16	7 1/2	10	15	15
*G	150,000	200	102	5/16 & 5/16	10	15	UPON REQUEST	
*H	300,000	400	171	2-3/16 & 1-5/16	UPON REQUEST			

* The last two sizes are out of the manifold type.

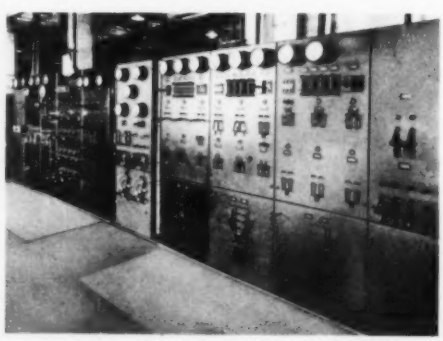


JENNINGS VACUUM HEATING PUMP ON TEST STAND



TYPE OF VENTURI METER AND VACUUM MANOMETER USED IN TESTING JENNINGS VACUUM HEATING PUMPS

STANDARD TEST ORIFICE



SWITCHBOARD IN NASH TEST PLANT WHICH FURNISHES ELECTRIC CURRENT OF ANY VOLTAGE, PHASE AND FREQUENCY

Water Capacity Is Tested by Venturi Meter

Water capacity is checked by testing the volume of water in g.p.m. that the pump removes from the receiving tank *under the given vacuum* and delivers against the specified discharge pressure.

Air Capacity Is Measured by Calibrated Orifice

Air capacity is found by means of a calibrated orifice of specified diameter, reamed in a brass plate one-eighth inch thick, located in the pump suction, and communicating with the receiving tank. This orifice determines the cubic feet per minute of air that the pump withdraws from the receiving tank and discharges to the atmosphere.

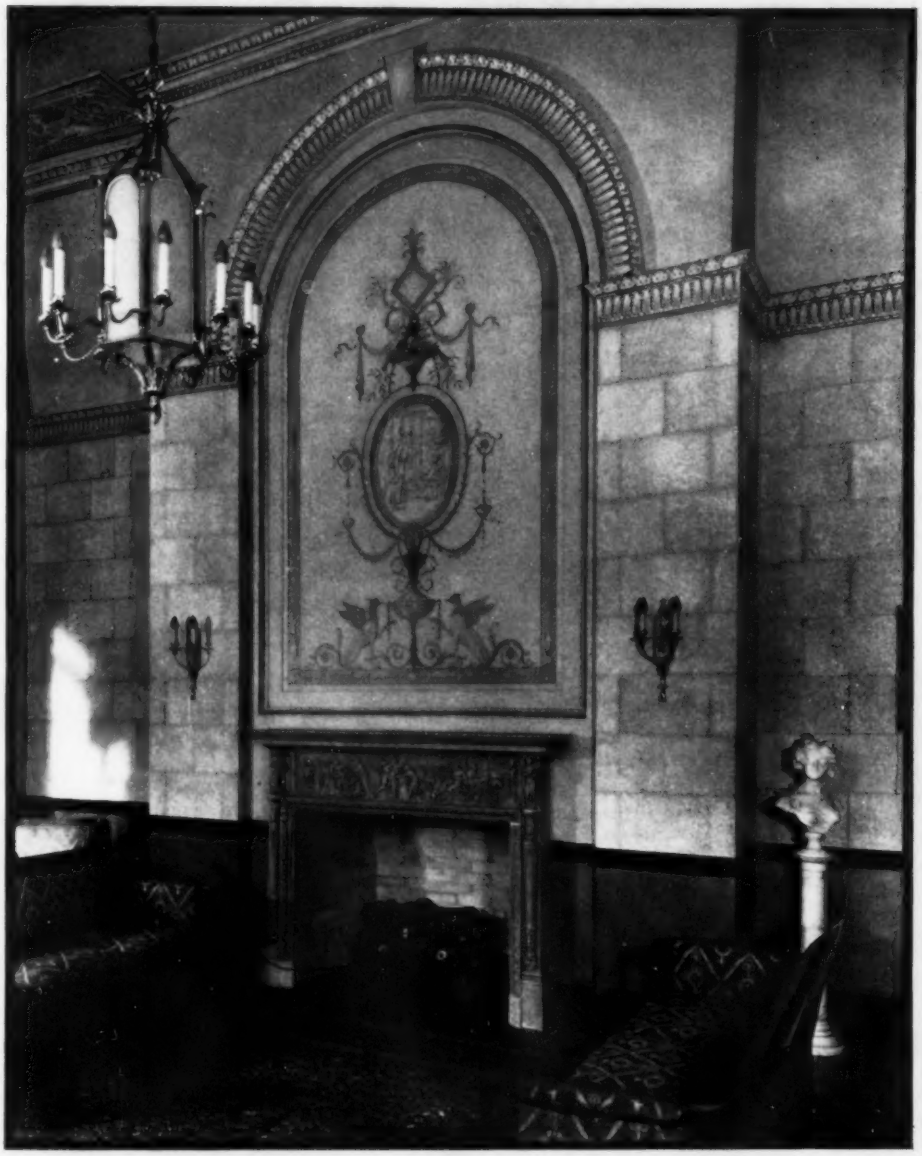
Air capacity is determined at the same time that the pump is delivering its rated volume of water. Water capacity is measured while the pump is handling its maximum rated quantity of air.

Only by such *tested* air and water capacities can good heating pump performance be assured. It pays to demand a certified factory test report, and to substantiate this wherever possible by a second test on the job.

CERTIFIED REPORT OF TEST

Jennings Pumps

NASH ENGINEERING CO.
SOUTH NORWALK, CONN., U. S. A.



Zenitherm Wall in reception room, Stark County Tuberculosis Hospital, Louisville, Ohio. *Albert L. Thayer, Architect*

Zenitherm *keyed* this Reception room

TO plan a hospital reception room without the usual austere and forbidding atmosphere was architect Thayer's aim. He keyed this cheery, rest-inviting room by using Zenitherm in warm, golden tones on the walls, with a colorful panel over the fireplace. Zenitherm was delivered to the job already cut in blocks 5/8" thick, and nailed to furring just like wood. Zenitherm is now made in a range of 21 colors. Glad to send you samples showing the variable texture and tri-toned effects.

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Two or three turns of the P-A-X telephone dial—automatically and instantly the connection is made. As a saver of time and steps in transmitting information within any organization nothing can take the place of Strowger P-A-X.

More than two thousand concerns in every conceivable line of business, whose needs range from four or five telephones to several thousand, find Strowger P-A-X indispensable. You are invited to call upon Strowger engineers in connection with any project calling for interior telephone equipment. They will be glad to make studies and submit estimates entirely without cost or obligation.

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In answer to the modern vogue for color the popular Monophone may now be had, not only in black, but also in a variety of beautiful colors. Made of solid colored bakelite, with chromium or gold plated fittings.

FLAX-LI-NUM IS DESIGNED TO GAIN INSULATING VALUE . . .

THERE are three scores upon which FLAX-LI-NUM differs from most insulating materials . . . Each has a scientific background . . . Each is an effort to produce the most efficient . . . lasting . . . and entirely satisfactory protection for the modern home . . . All three evolve from the fact that FLAX-LI-NUM was designed to gain insulating value after application . . . rather than lose it.

First, FLAX-LI-NUM is a single purpose material. It should be used only for insulating against heat and cold or sound . . . for scientific fact has proven that when insulation is used as a plaster base or sheathing, it forfeits a possible 50% gain in insulating value . . . FLAX-LI-NUM did not want to forfeit insulating value.

Second, FLAX-LI-NUM is designed to be applied by the "two-air-space" method. Here again, scientific fact shows this application the most effective. Tests by the U. S. Bureau of Standards indicate an increase of 50% in insulating value when a material is so applied. According to their Letter Circular No. 227, "The addition of a half-inch layer of insulation in the middle of the air space in a frame wall is, therefore, the equivalent of adding about a three-quarter inch layer at some other place in the wall . . . FLAX-LI-NUM wanted this additional insulating value.

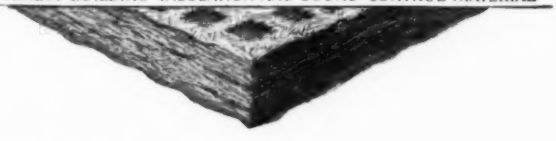
Third, FLAX-LI-NUM is semi-rigid in form because only semi-rigid sheets, already properly flanged, can economically be applied by the "two-air-space" method . . . FLAX-LI-NUM wanted to give home builders this greater insulating value without increased cost.

Thus, FLAX-LI-NUM'S claim to "scientific correctness" is entirely fulfilled. Few other materials can stand this rigid test. Few other materials, if any, have so conscientiously endeavored to provide the greatest possible insulating value.

FLAX-LI-NUM INSULATING CO.
St. Paul, Minn.

Flax-li-num

A CORRECT BUILDING INSULATION AND SOUND CONTROL MATERIAL



FLAX-LI-NUM INSULATING CO. AR-12
St. Paul, Minnesota

Send me complete information about Flax-li-num. Also facts about the 2-air-space method.

Name.....

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The architect's design alternates 12" x 12" tiles of Tourmaline and Matrix, with a 3" border of Tourmaline, and a 1" border of Tourmaline and Matrix, next to the wall.

"The meeting will now come to order"...

Easy enough to maintain friendly decorum in business-like board rooms that invite it

THERE are definite reasons why the architect who planned this Board of Education room in the Administration Building at Atlantic City, N. J., chose Armstrong's Linotile for the floor.

First of all, he chose this particular floor design in marbled black and white because it exactly suited his decorative plan! But—he could have originated almost any other design with Armstrong's Linotile, had he wished. For the first advantage of this modern custom-built floor is its adaptability. There are thirty marble and plain colors, and eighteen standard tile sizes, square and oblong; so, design becomes a matter of personal taste in color and pattern.

But don't think that the architect's choice was based on appearance alone. Where men must meet in business, friendliness mingles with gentlemanly decorum. And where Armstrong's Linotile is the floor, this atmosphere is actually created. Natural enough, since this aristocrat of hand-laid floors is warm and foot-cushioning. It is quiet, too, muffling all foot noises. Permanent, of course, for its quarter-inch thickness insures many years of enduring beauty and service. Easily laid. Easily and inexpensively cared for.

All these facts are given to you in detail in our book, "Custom-Built Floors of Cork." There you'll discover other reasons why Armstrong's Linotile is the modern floor for school board rooms, business conference rooms, and wherever the public walks; in private homes, too.

This book also shows you the wide selection of colors and suggests design possibilities. Tells you some interesting facts, too, about Armstrong's Cork Tile, another custom-built floor. We'll be pleased to send it to you, free upon request. Armstrong Cork Company, Custom Floors Department, Lancaster, Pa.

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The Mark of Quality

Armstrong's CUSTOM FLOORS

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Made by the Makers of Armstrong's Linoleum

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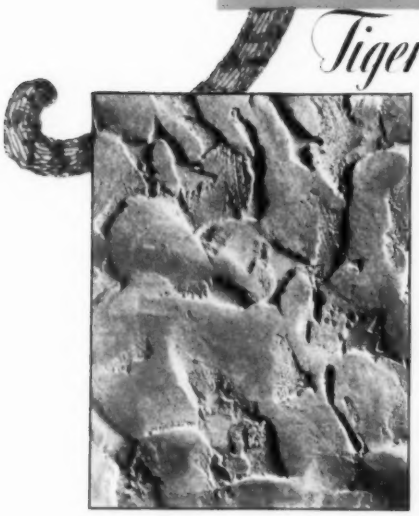
Tiger "FOOTPRINTS" *are instantly recognized*



The distinguishing imprint of the Jungle Master flashes to the mind of man a message that demands vital consideration. Our symbolized Tiger also shares this characteristic, for as his passing is recorded on the trail of American Architecture, it is instantly recognized and accorded respect as a mark of added value.

Tiger "Footprints" (textures and finishes) create an atmosphere of unchallenged distinction, lending to the entire structure an individuality and charm. These artistic textures and finishes for both walls and ceilings are readily obtained with Tiger Finishing Lime, possessing as it does, remarkable plasticity and many other desirable working qualities.

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MODIFIED SPANISH
Another Attractive Tiger "Footprint"

An ideal and very popular room texture, permitting a wide range of two and three tone color effects. Started with a light buff base, it can be developed by super-imposing green gold, rose or blue. The texture is trowel spotted, then ironed out.

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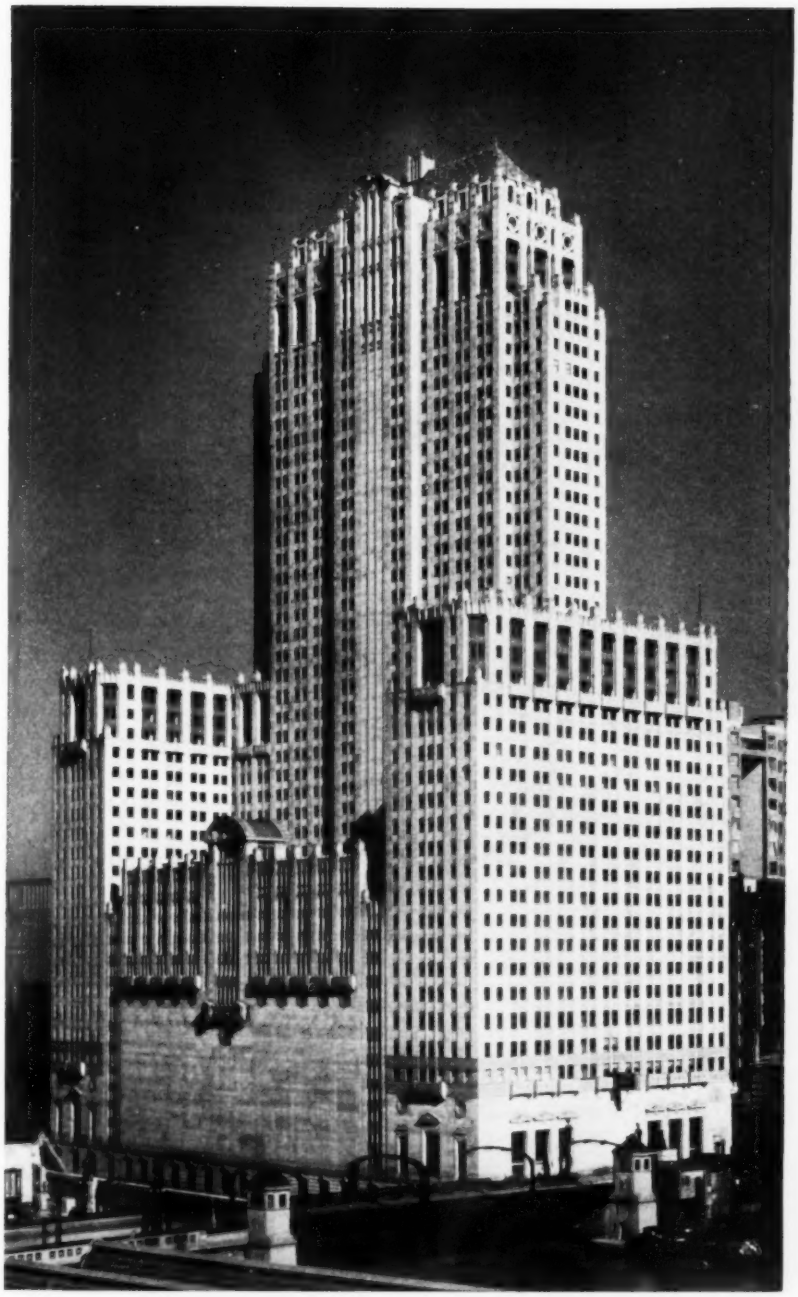

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Civic Opera Building, 20 Wacker Drive, Chicago. Graham, Anderson, Probst & White, Architects. All facades are embellished and enriched with Northwestern Terra Cotta—to the extent of nearly all decorative detail—over 33% of the superficial area of the building. Terra cotta provides desirable ornamentation at low cost because units can be repeated indefinitely and exactly from one fine master model.

THE NORTHWESTERN TERRA COTTA COMPANY

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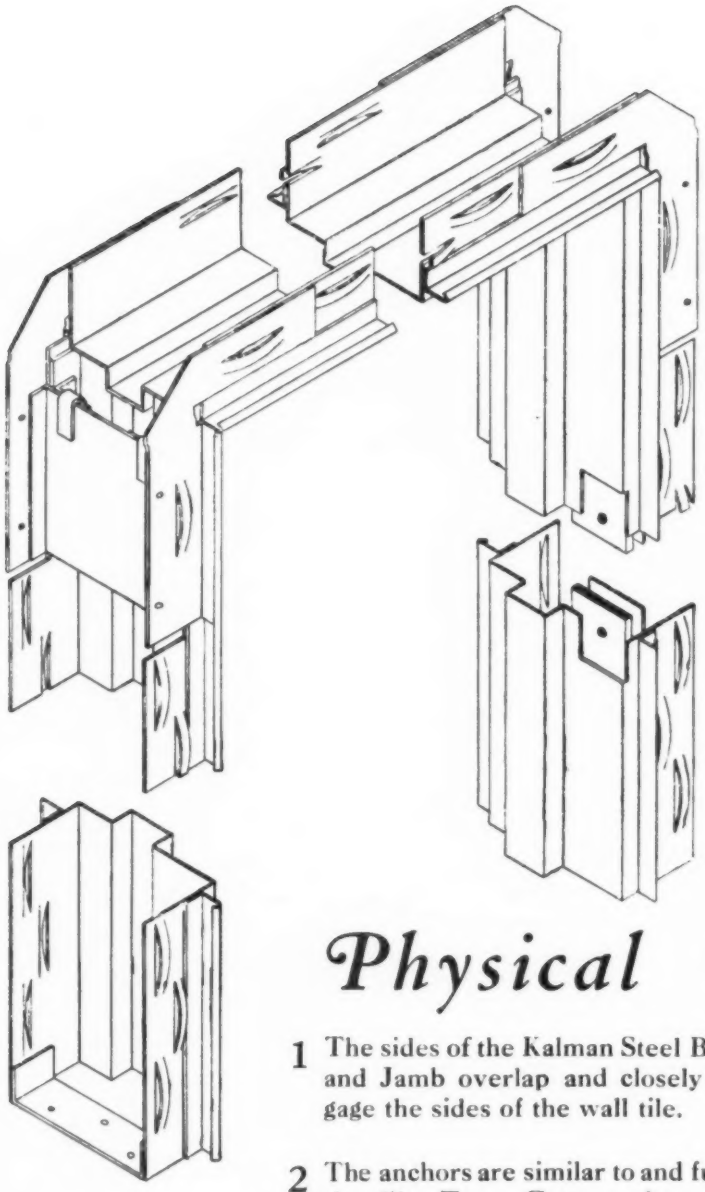

The IMPROVED STEEL BUCK *and* JAMB

In the Kalman Steel Jamb, form truly follows function.

Kalman Steel Jamb is not made in imitation of wood, but is designed to give steel character as steel and is in keeping with our interpretation of the modern trend of architectural design.

Physical Characteristics

1 The sides of the Kalman Steel Buck and Jamb overlap and closely engage the sides of the wall tile.

2 The anchors are similar to and function like Terra Cotta anchors and are visible where they attach to the Jamb until the wall is plastered, thus their use or omission can be easily verified.

3 The Jamb is supplied with elements which form definite grounds and metallic terminations for the plaster.

4 The sides are expanded into rows of loops which form a mechanical bond and reinforcement for the plaster over a wide area.

5 The plaster passes through the perforations, back of the loops to the sides of the tile.

6 The body of the Jamb is made of specially treated steel and the face is finished with Duco primer. The terminals are made of specially treated galvanized sheets and form a bond at the junction, with the plaster similar to that provided by Corner Bead.

KALMAN STEEL COMPANY

KALMAN STEEL

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Residence:
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A slate roof is the logical choice for the half-timbered house in the English style. To secure perfect harmony, however, the roof must be especially designed. Where Tudor Stone is specified our Architects' Service Department co-operates with the building architect in this important detail.

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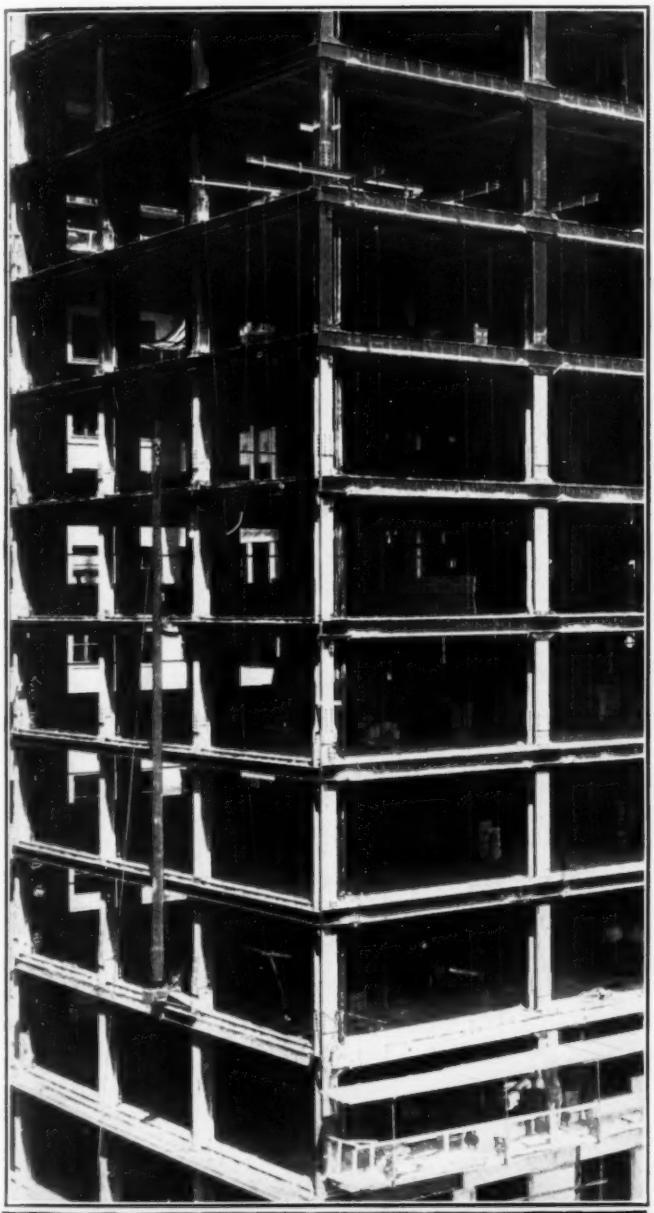
Rubber Only Material That Withstands Tire Road Wear



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BECAUSE NATCO MEANS EVERYTHING IN TILE

FOR WALLS—interior and exterior, load bearing, curtain and partition; finished face, brick veneered, or stuccoed—

FOR FLOORS—flat arch, combination floor, or Natcoflor—

FOR FIREPROOFING—on beams, girders, and columns—

—you can safely specify Natco, secure in the knowledge that Natco Structural Clay Tile completely fills each need. No matter what the application, Natco brings to it the sterling qualities of fire-safety, permanence, freedom from maintenance, low depreciation, protection, and all-around economy, that have dictated the use of Natco in almost every building of note erected in recent years.

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NATCO
THE COMPLETE LINE OF STRUCTURAL CLAY TILE

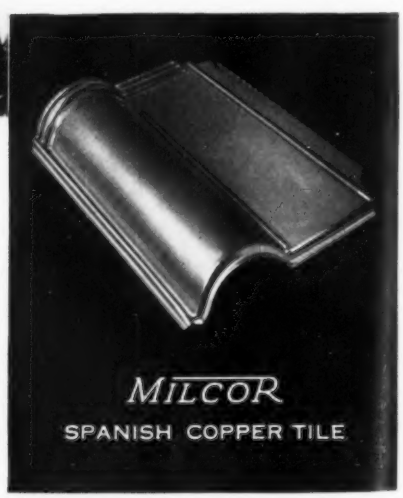
TURN TO "SWEET'S"

Rare Charm
Plus the Permanence of Copper

THERE is an aristocratic distinction about a roof of *Milcor* Copper Spanish Tile . . . for pure copper defies imitation. The rich, handsome hues that come with age bespeak the dignity and comfort that will be found within the home which it protects. The *patina* of weathered copper cannot be reproduced . . . It is a beauty which belongs to copper alone . . . Thus, *Milcor* Copper Spanish Tile endows a home with the rarest of charm . . . plus the permanence of this enduring metal . . . Roofs of *Milcor* Copper Spanish Tile are forever free from maintenance. They need never be painted or stained . . . for time shades them with unapproachable artistry. They need never be repaired . . . for copper resists corrosion and deterioration. It is proof against storms and unaffected by the severest of climatic changes . . . and in addition, *Milcor* Copper Spanish Tile are fire-proof. Sparks and flying embers die upon them without damage.

From every standpoint of beauty and practicability, the use of *Milcor* Copper Spanish Tile is logical and sound. To study homes that have been so enriched is to be convinced that in no other way can such charm and character be achieved.

MILWAUKEE CORRUGATING CO.
1407 Burnham St. Milwaukee, Wis.



ANACONDA from mine to consumer
Pure Copper

Milcor Metal Spanish Tile is, in addition to pure Anaconda Copper, furnished in Copper Alloy Roof Ternes or Armco Ingot Iron painted red or green. However, any color scheme desired can be easily achieved. Also double coated galvanized (hand dipped after formed.) All *Milcor* Metal Tile has the famous *Milcor* "Tite-Lock" edge, which seals the roof against leakage.

ARMCO Ingot Iron

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THROUGHOUT THE NEW HAHNEMANN HOSPITAL

du Pont Duco creates interior beauty

PHILADELPHIA'S outstanding hospital project for 1928, the New Hahnemann Hospital, is strikingly original in design.

For the interiors of such modern structures as this, du Pont finishes are the logical choice, supplying color and texture that harmonize with the modern trend—measuring up completely to rigid quality standards. Among architects and engineers they have the universal recognition which only proven merit can win.

A new booklet of color suggestions by architects . . .

Modern color schemes for residences, suggested by leading architects, are illustrated in the new du Pont book, "Modern Color Schemes for Your Home." We shall be glad to mail a copy to you, together with a card showing the new du Pont Prepared Paint colors.

Inquiries regarding du Pont paints, varnishes, enamels and other pigment products are invited. The Architectural Division is equipped to deal intelligently with special problems of application, decorative effects, and technique.

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Number 12

Of a series of historic structures illustrating the varied ways in which American marble has contributed to the development of our national architecture. This picture of the Boston Capitol was taken some time ago before the modern wings were added. The circular portrait is a likeness of Samuel Adams.

The Transformation Of Beacon Hill

THE land on which the Massachusetts Capitol now stands was once used by Governor Hancock for a cow pasture. At the peak of the hill was a high mast where signal fires were set to warn the inhabitants of invasions or Indian uprisings. Thus originated the name "Beacon Hill."

After a time the top of the hill was cut off and a state house was built on it—a structure of brick and marble. Governor Samuel Adams laid the cornerstone on the Fourth of July, 1795. Paul Revere made the copper plates which covered the great dome.

The original front was designed by Charles Bulfinch whose work has an outstanding place among Colonial builders. Many additions have come with the later years but the central section which fronts the Common still stands as a monument to his memory.

VERMONT MARBLE COMPANY—PROCTOR, VERMONT

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See Sweet's Catalog for Specifications and Other Data

VERMONT MARBLE

Architects
Lackawanna, N.Y., Schools
Bley & Lyman
Buffalo, N.Y.

They Like It and— They Say So

PERHAPS one of the most significant things about PeerVent is its large percentage of repeat orders. Scores of School Boards order a single installation as a "try-out" and find the service so satisfactory that additional orders quickly follow.

The Roosevelt School in Lackawanna, N. Y., pictured above, is one of four completed this year, all the outcome of three prior installations in 1923 and 1924.

PEERVENT UNITS

Not only for schools but also for other public and semi-public buildings

Another interesting case is in Hackensack, N. J. An installation made in 1914 is still giving satisfactory service. For this reason the new school building finished this year is equipped with the latest improved PeerVent Units.

PeerVent offers a service backed by forty years specialization in heating and ventilation, and fifteen years experience in the combined heating and ventilating equipment. Peerless you know, is the originator of the Unit System of heating and ventilating, and the thoroughness with which it pioneered this field may be judged from the fact that its first year's installations are still giving satisfactory service.

Let us send you the PeerVent booklet which will give you further interesting details.

PEERLESS UNIT VENTILATION COMPANY, INC.

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Bridgeport, Connecticut

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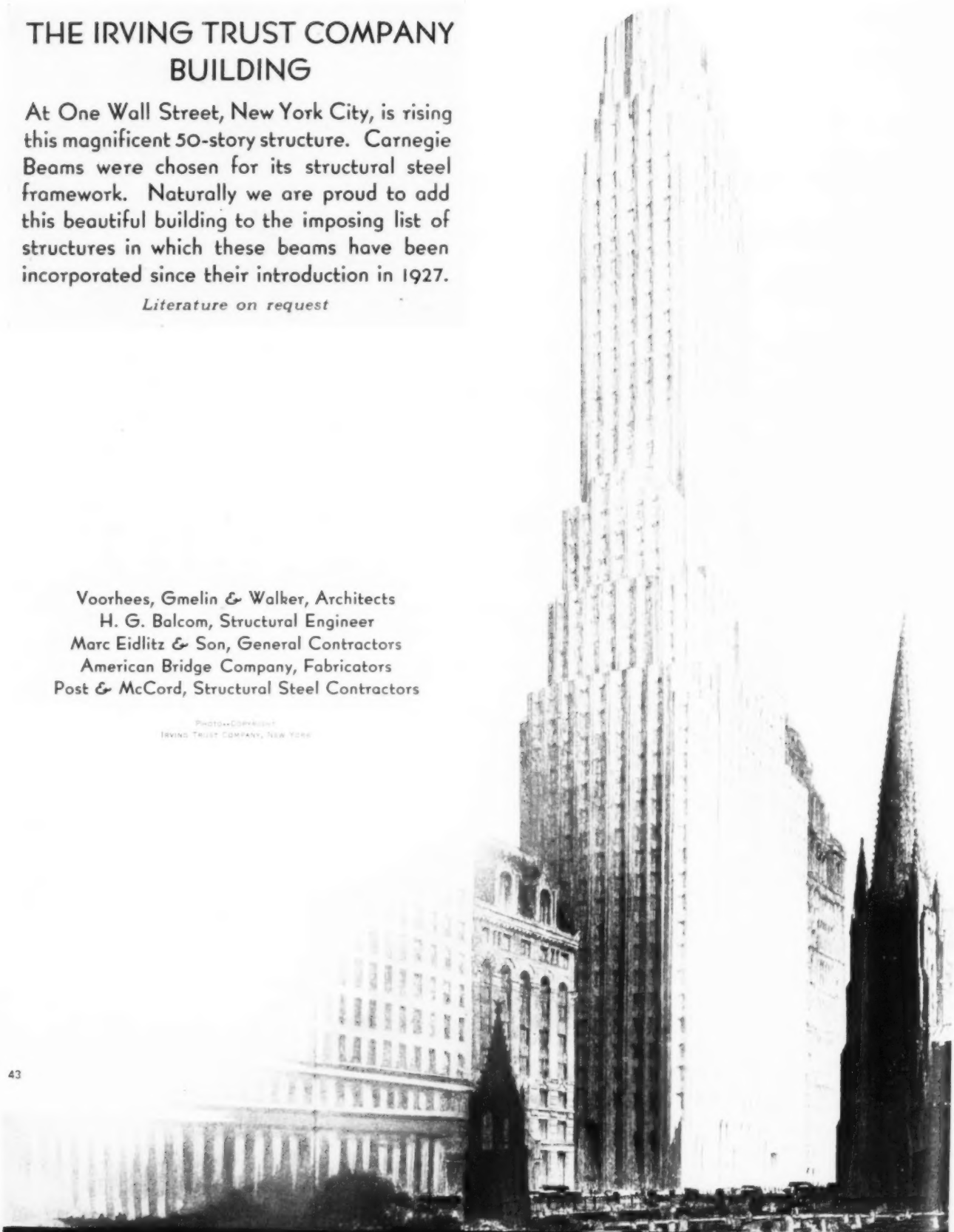
At One Wall Street, New York City, is rising this magnificent 50-story structure. Carnegie Beams were chosen for its structural steel framework. Naturally we are proud to add this beautiful building to the imposing list of structures in which these beams have been incorporated since their introduction in 1927.

Literature on request

Voorhees, Gmelin & Walker, Architects
H. G. Balcom, Structural Engineer
Marc Eidlitz & Son, General Contractors
American Bridge Company, Fabricators
Post & McCord, Structural Steel Contractors



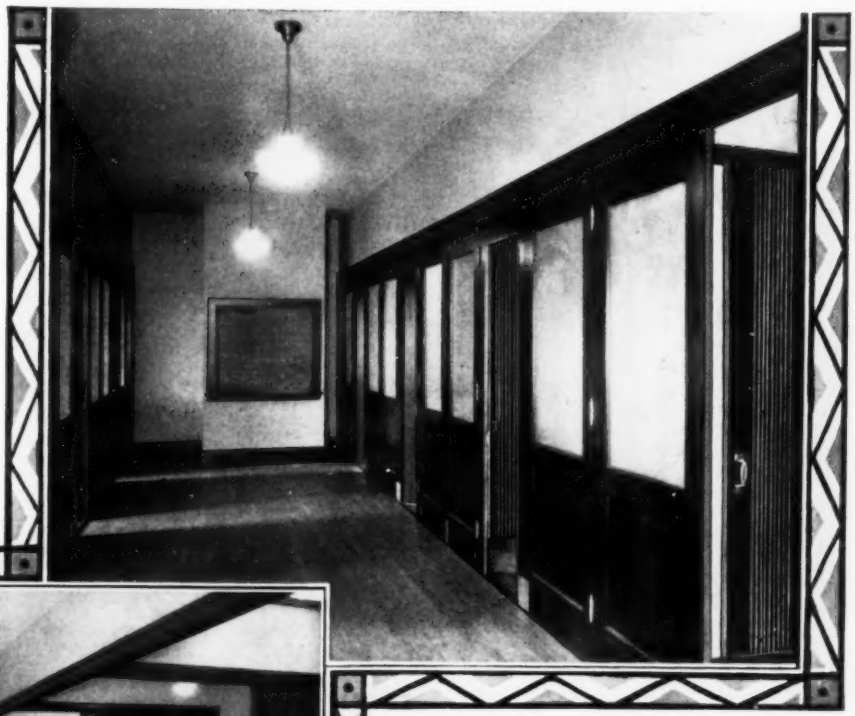
43

CARNEGIE STEEL COMPANY
Subsidiary of United States Steel Corporation
PITTSBURGH PENNA.

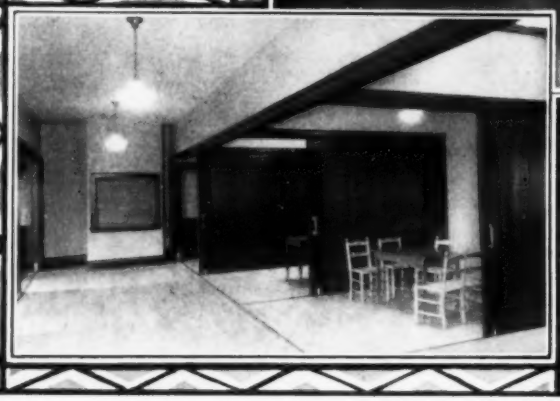
Wilson

SECTIONFOLD AND ROLLING PARTITIONS

(REG. U. S. PAT. OFF.)



Note how combination of Wilson Sectionfold and Vertical Rolling Partitions sub-divide the large hall into many smaller classrooms. Partitions folded or rolled back out of the way at will.



Lake Street Presbyterian Church, Elmira, N. Y.
Harry M. Haskell, Archt.

To Keep Within The Appropriation

VERY often it is desirable to use Wilson Sectionfold Partitions for sub-dividing auditoriums in churches, schools, etc., but ample funds are not available.

In this event we suggest a combination of Sectionfold Partitions with Wilson Rolling Partitions as illustrated above. This effects a considerable saving in price with no lessening in the utility or convenience of the room.

Glass may be introduced in the Sectionfold Doors to provide light, if necessary, and shuttle doors between classrooms, or between corridors and classrooms may be used for convenience.

When all the Partitions are folded or rolled up the entire room is free to be used as an auditorium when necessary.

We are at your service for furnishing data for just such layouts as this.

Send for our Catalog No. 1

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OVER FIFTY YEARS IN BUSINESS

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THERE'S always a reason why the builders of the best equipped apartments use ROBRAS 20-20 Radiators. Sometimes the reason is one of aesthetics. Sometimes it is one of practicality. Sometimes it is a combination of both.

However, with ROBRAS 20-20's *in the wall, out of sight,* and *out of the way* no tenant can have any what-shall-I-do-with-the-radiator problem.

This means satisfied tenants, full apartments and happy owners.

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It can pick up radio—or it may be speech—entertainment—supplied directly by microphone. Or it may be accurately rendered music from the Western Electric Music Reproducer . . . For full information, consult Sweet's Catalogue. Or send for interesting booklet to the distributor, Graybar Electric Co., Graybar Building, New York, N. Y. Offices in 72 principal cities.

The last word in municipal buildings—one that can talk! *—and make itself heard.*

For hotels—paging by loudspeaker. And a hundred other uses—all important.

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On with the dance! An especially popular application for clubs, hotels, restaurants, etc.

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It hooks up with radio. Brings into a building everything that's on the air.

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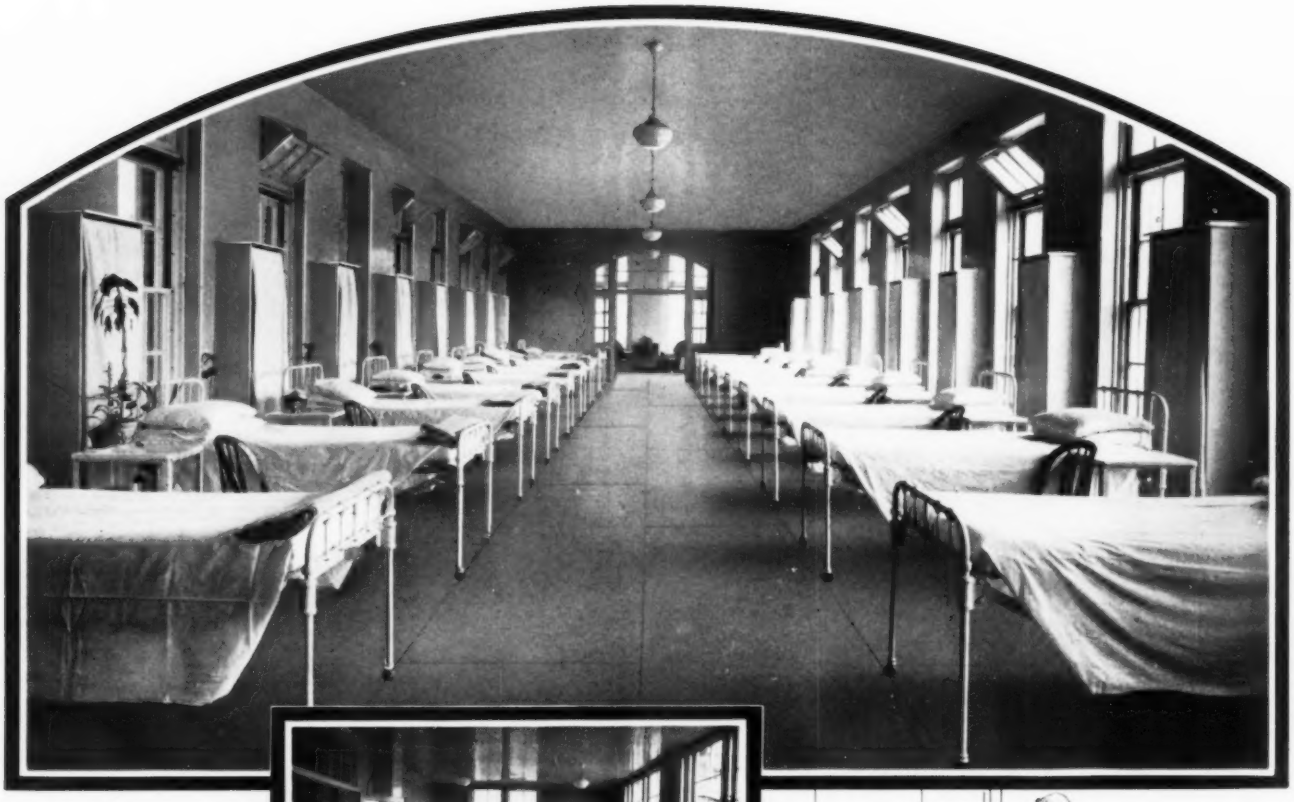


All is quiet at the Walter Reed General Hospital

83,000 square feet of STEDMAN REINFORCED RUBBER FLOOR

Thousands of military feet will fall quietly on this echoless Stedman floor—today—tomorrow, and during many years to come. For one of the outstanding characteristics of this material is its ability to maintain its resilience throughout years of rigorous service. The reason lies in its structure, where cotton fibre controls and reinforces the natural elasticity of the rubber. These minute cotton filaments permeate the compound and prevent cracking and spreading, while supplying toughness and strength to a floor that presents a smooth, sanitary, and durable surface at all times.

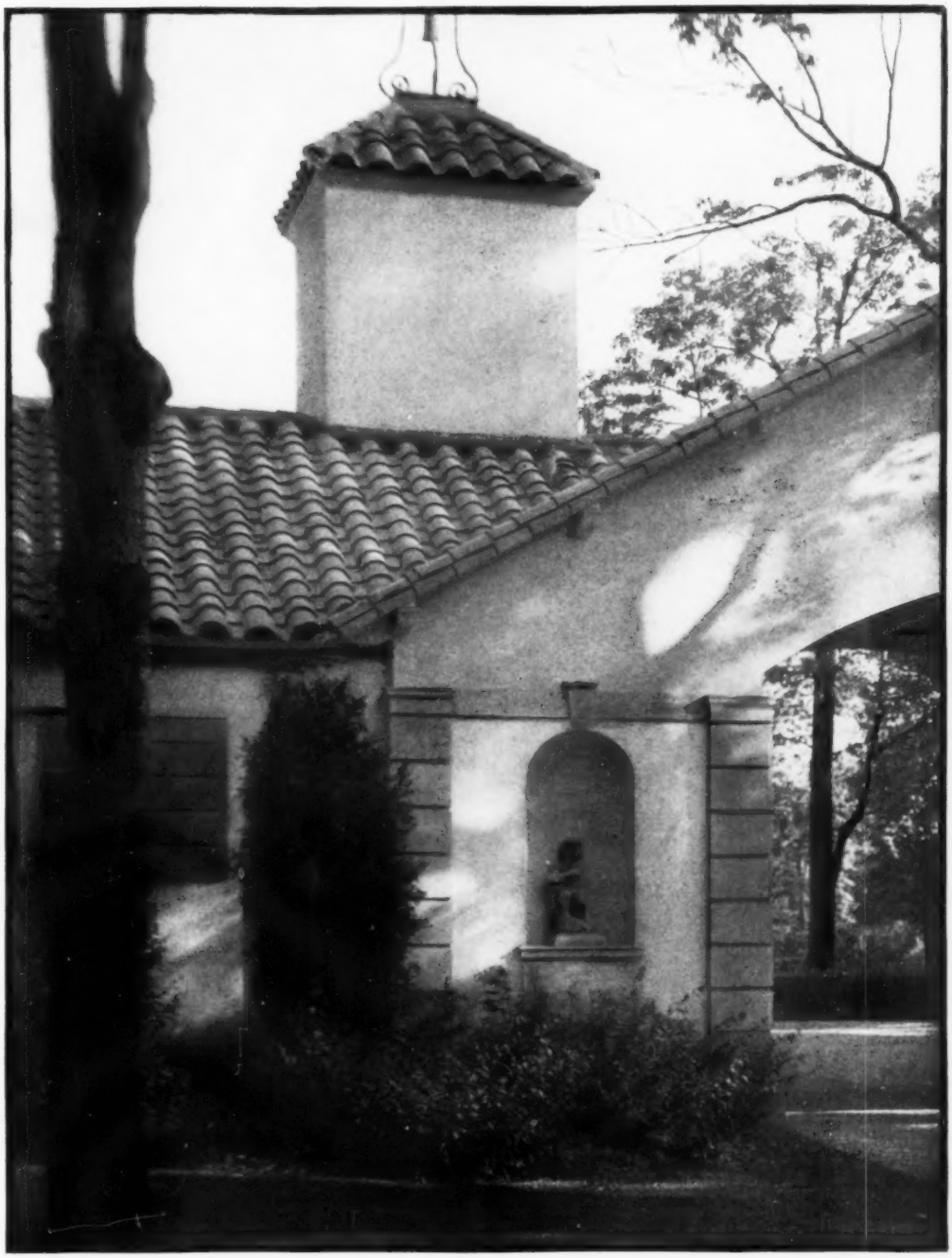
Stedman Tile owes its success in other fields to the excellent record it has shown in hospital installations, where it has been considered a standard for many years. A catalog in color will be sent at your request.

These photographs were taken at the Walter Reed General Hospital, Washington, D. C., (U. S. Army Hospital), and show a ward and office laid in Stedman Brown Black Reinforced Rubber Flooring.

STEDMAN PRODUCTS COMPANY :: SOUTH BRAINTREE, MASSACHUSETTS

STEDMAN RUBBER TILE

Invisible Fibre Reinforcement gives lasting Wear and Beauty



This charming gate lodge, the residence and other buildings on the estate of Mr. Melville N. Rothschild, Glencoe, Illinois, are roofed with IMPERIAL Straight Barrel Mission Tiles in a mixture of light and dark sage browns. These tiles are most appropriate to the Italian style of architecture, and will provide years of protection without repairs. Earl H. Reed, Jr., of Chicago, was the architect.

LUDOWICI-CELADON COMPANY

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NEW YORK: 565 FIFTH AVENUE WASHINGTON: 758 FIFTEENTH ST. N. W.

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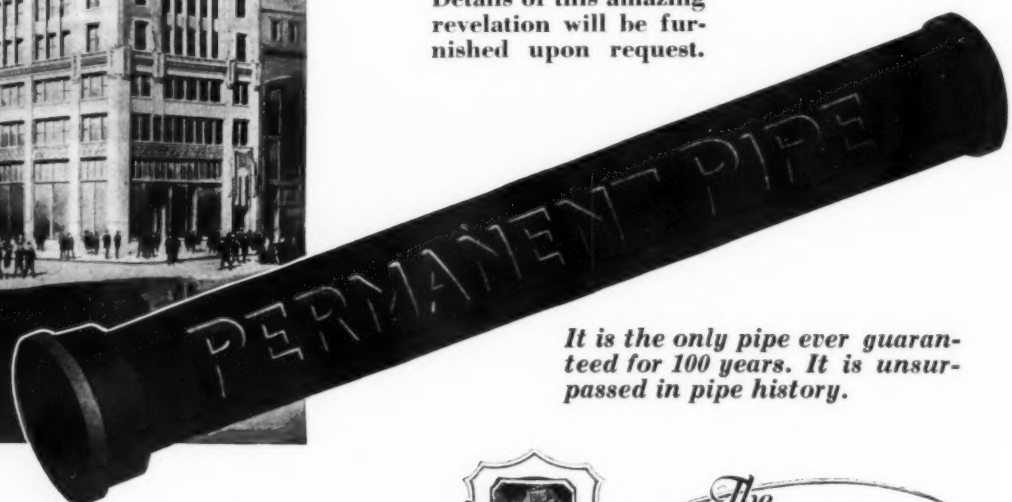
TO REPLACE

CAST IRON SOIL PIPE

SURVEY recently made by disinterested parties in Chicago loop district reveals appalling losses to property owners in height buildings equipped with other than cast iron pipe. Stacks entirely clogged with rust scale, rendering them unserviceable. In service 6 to 22 years. Cast iron soil pipe in similar service, same locality, 30 to 50 years and in perfect condition.

Details of this amazing revelation will be furnished upon request.



It is the only pipe ever guaranteed for 100 years. It is unsurpassed in pipe history.

32nd St. and Madison Ave., New York
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The SOIL PIPE ASSOCIATION
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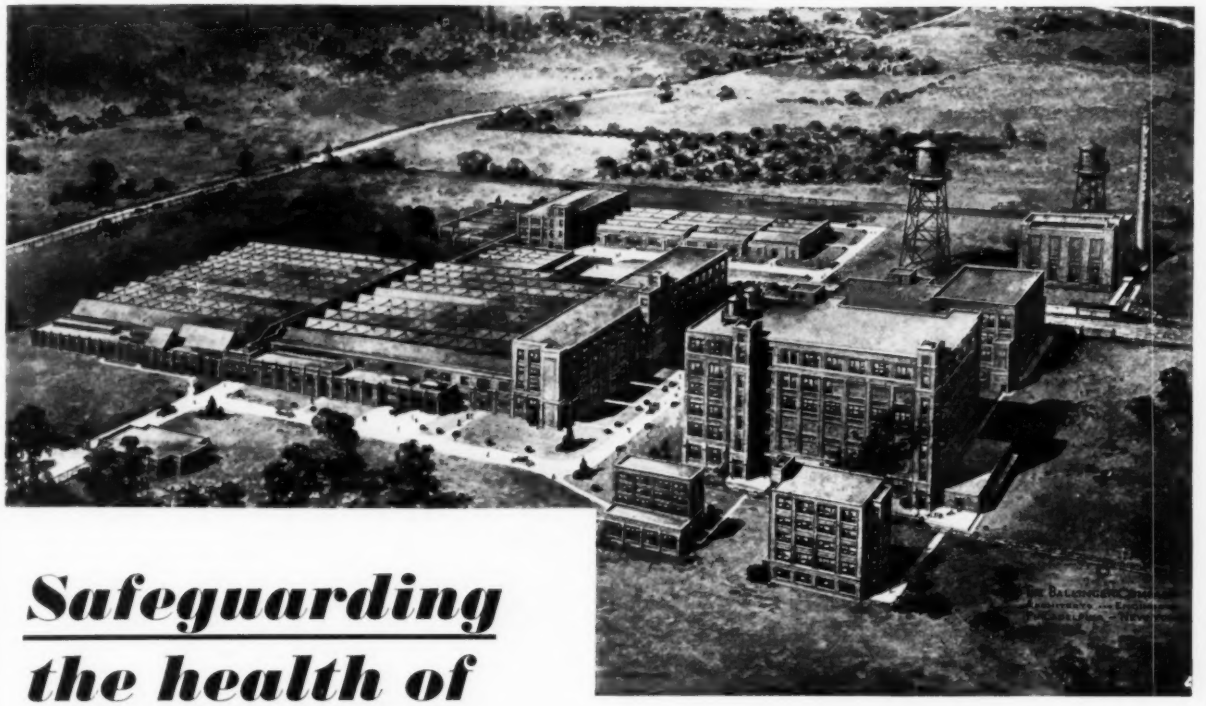

The Viscose Co., (new plant) Meadville, Pa. (*Architects and Engineers,* The Ballinger Co., Philadelphia, Pa.; *General Contractor,* J. P. Pettyjohn & Co., Lynchburg, Va.; *Plumbing Contractors,* W. Muench, Philadelphia, Pa.)

Safeguarding the health of the Worker

INDUSTRY today is highly specialized. The mass production methods so popular and so necessary to industrial growth would not be possible without the improved working conditions that are a part of every successful industrial institution. ▼ Architects have had a prominent part in promoting industrial welfare, specifying as they do the materials that assure sanitation, convenience and comfort. ▼ A vital part it is that Halsey Taylor fountains play, for they offer workers and employers alike the maximum of hygienic safety with a minimum of trouble and annoyance. ▼ That is why leading architects appreciate "the specification for sanitation"—Halsey Taylor Drinking Fountains and Coolers.

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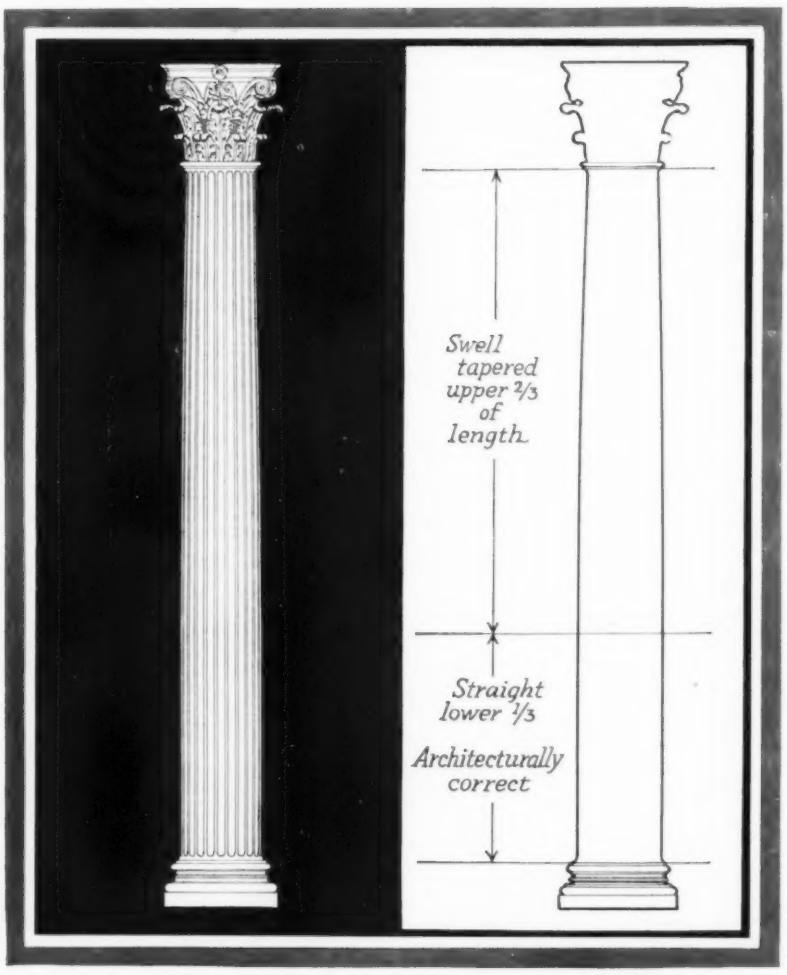
HALSEY TAYLOR
Drinking Fountains

Shown above is No. 520-600, specified for the building illustrated. The fountain is a pedestal type, with cast-iron base and a cover that can be raised to make connections without disturbing floor or concrete and then bolted to foundation. Receptor is of vitreous china with automatic stream control *and* two-stream projector*—the two distinguishing features that make these fountains safe, convenient and* PRACTICAL! *Complete range of modern styles and designs to meet every need!*

Famous
KOLL LOCK-JOINT COLUMNS
cost little, if any, more

The genius of the trained men who fashion Hartmann-Sanders Koll Columns is nothing less than a revelation to architects and builders, who witness for the first time the results of their painstaking efforts. Product of America's largest facilities of their kind, these finer columns embody at least eight important superiorities. Yet their cost is little, if any, more.



1. Koll lock-joint columns *cannot* come apart
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These Booklets Gladly Sent

Hartmann-Sanders have just published two interesting booklets, illustrating a notable group of columns, entrances and garden equipment. Architects and builders are invited to write for booklets numbers 53 and 48. No charge. Hartmann-Sanders Co., Factory and Showroom: 2152 Elston Avenue, Chicago. Eastern Office and Showroom: Dept. R, 6 East 39th Street, New York City.

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KOLL COLUMNS · COLONIAL ENTRANCES · PERGOLAS
ROSE ARBORS · GARDEN EQUIPMENT

A residence at Scarsdale, N. Y. *Architect:* W. Stanwood Phillips, New York. *Builder:* Westchester Building Associates, Incorporated.

Through the office of

W. STANWOOD PHILLIPS

Fenestra Casements

were used in this beautiful Scarsdale house

With its attractive bays, dormers and oriels, its stately chimneys, its rugged roof and its mottled brick walls, this house is a distinguished expression of English motifs. And like the prototypes of an earlier day, much of its beauty is due to the casement-type windows with their small sparkling panes.

Not alone because of the inherent beauty of Fenestra Casements but also because of their *modern comforts and conveniences,* these better steel windows are being specified by American architects:

Weather protection, due to proper design and accurate workmanship, better ventilation — 100% opening if desired; easy washing, made possible by modern extension hinges; fly-tightness, an advantage of the new Fenestra Screen Casement in which the steel casement and the metal screen are made to operate together — both furnished by one manufacturer; and finally low cost, a result of quantity production in a large variety of types and sizes.

New literature covering Fenestra Screen Casements will be gladly sent upon request. The complete Fenestra Blue Book will be found in your copy of Sweet's Architectural Catalogue.

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Factories: Detroit, Michigan, and Oakland, Calif.
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Fenestra SCREEN CASEMENTS

INTERNATIONAL CASEMENTS

York & Sawyer
Architects

All casements in the New York Athletic Club were supplied by the International Casement Company

Where materials of the highest quality are required International Casements are specified.

Also Manufacturers of International Austral Windows

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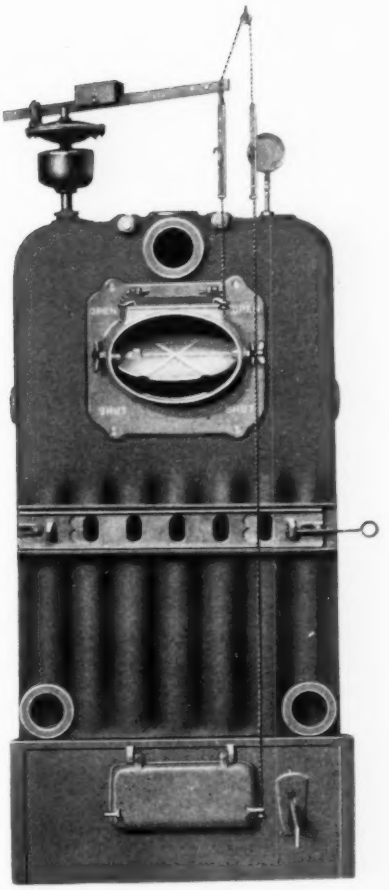
FACTS
make sales story easy to put across



Your average customer never bought a boiler before. He knows he wants heating comfort at low cost, but he doesn't know what it is about a boiler that will give it to him. For this very reason you have an opportunity to do a real sales job, telling him about boiler efficiency—which is easy when you have all the efficiency features to talk about that are incorporated in the New Smith "16."

SMITH "16"
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The New Smith "16" has everything that makes for easy selling and satisfied customers—
Extra Large Fuel Space
Extra Large Combustion Space
Firepot Lined with Firebrick
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Extra Large Fire Surface
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Auxiliary Air Supply

Many fuels require more air than can pass through a uniform fuel bed of the thicknesses used in domestic heaters. The U. S. Bureau of Mines says, "As, roughly, one-half of the combustion process takes place in the fuel bed and one-half in the combustion space, the addition of air above the fuel bed for completely burning the gases and preventing smoke is essential. This additional air should be introduced close to the surface of the burning fuel and, if possible, in many fine streams to facilitate its mixing with the combustible gases rising from the fuel bed."

This is perfectly accomplished in the New Smith "16" by a special adjustable slide damper at the rear of the boiler. See illustration above. No matter what fuel is used, the proper amount of air is readily supplied for complete and efficient combustion.

For complete information on this and other efficiency features of the New Smith "16" such as the extra large fuel space, extra large combustion space, firebrick-lined firepot, etc., write for free booklet. The Smith "16." Address: The H. B. Smith Co., Dept. E-44, Westfield, Mass.

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The H. B. Smith Boilers for steam, hot water and vapor heating; radiators; and hot water supply boilers; for every type and size of private homes, office building, factory and public building.

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WITH building materials and land values at their present high prices, complete utilization of all available space becomes an economic necessity—in the house just being built or in one several years old. By using MAFTEX it is a simple and economical job to erect an extra room or two in available space in attic or basement.

MAFTEX, made from the tough roots of licorice, is the ideal four-in-one board that combines Insulation, Sheathing, Plaster Base and Sound Deadening. It is of single ply construction, easily handled, quickly installed and economical in cost. It is moisture resisting, does not attract rats or vermin and does not mold or disintegrate.

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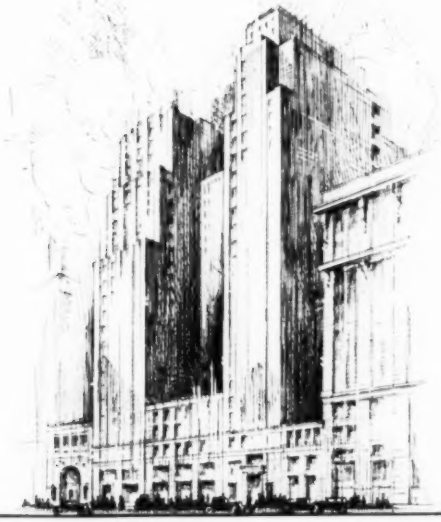
MAFTEX

Turn-buckle test proves resistance to distortion as compared with wood. 8′ panels of MAFTEX and ordinary 7/8″ wood sheathing were subjected to equal pulls by 84 turns of turn-buckle. Wood panel was pulled 12½″ from perpendicular but MAFTEX yielded only 2 5/16″. When load was removed, wood panel recovered only 17% while *MAFTEX recovered 54%.*

Write for samples and make your own test.



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ANNOUNCES A
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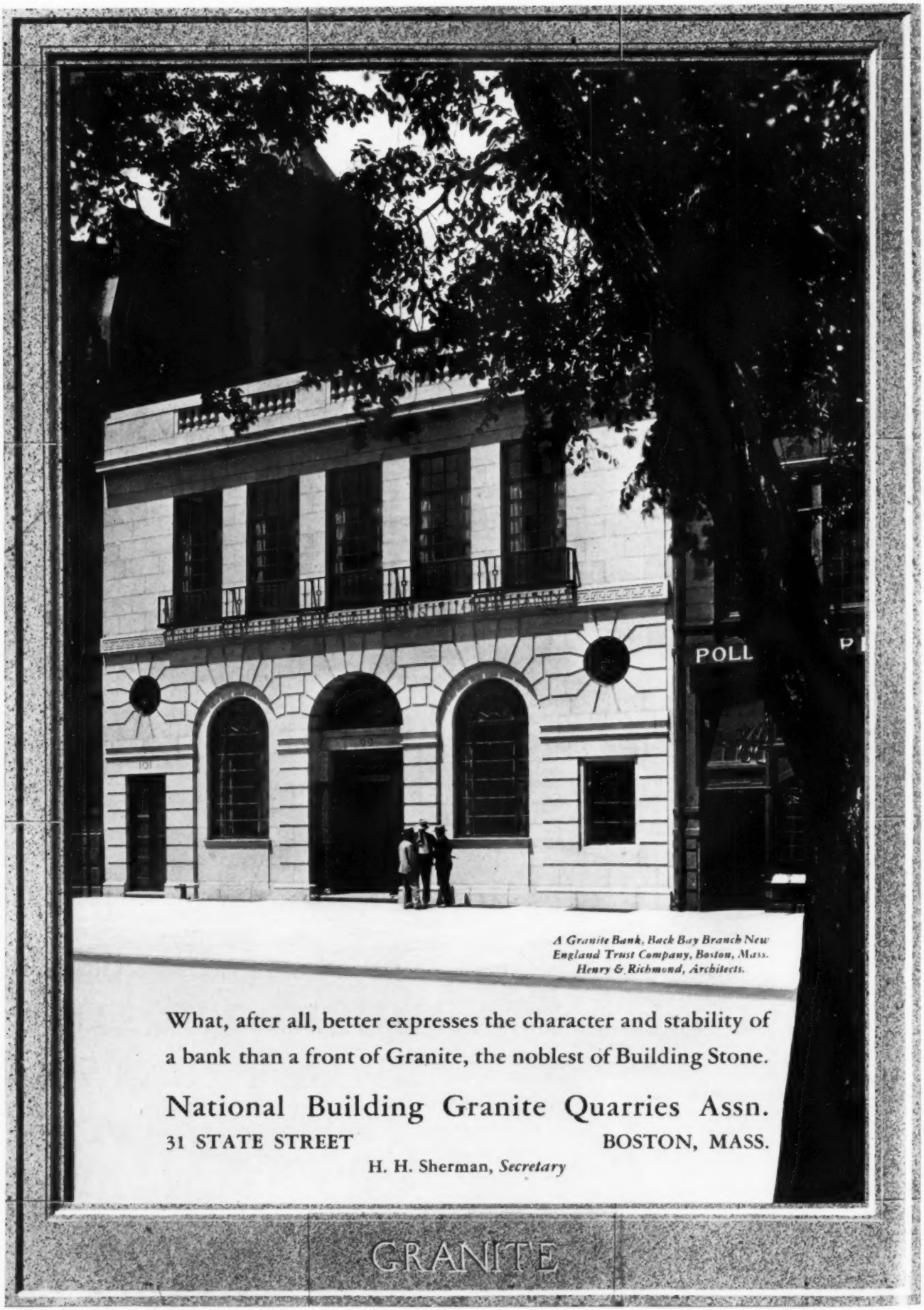


A Granite Bank, Back Bay Branch New England Trust Company, Boston, Mass. Henry & Richmond, Architects.

What, after all, better expresses the character and stability of a bank than a front of Granite, the noblest of Building Stone.

National Building Granite Quarries Assn.

31 STATE STREET BOSTON, MASS.

H. H. Sherman, *Secretary*

GRANITE

ARCHITECTS' ANNOUNCEMENTS

BACON & TISLOW, architects and engineers, announce the removal of their offices to 1015 Architects and Builders Building, 333 North Pennsylvania Street, Indianapolis, Ind.

THE FIRM of Downing & Hanes, engineers, Eilerman Building, Lima, O., has dissolved partnership and discontinued business.

THE PARTNERSHIP of the architectural firm Snyder & & Babbitt, 16 East Broad Street, Columbus, O., has been dissolved, and the business is now under the name of Mr. Ralph Snyder.

MR. IRA E. WASHBURN, JR., has opened an architectural office at 808 Central Building, Wichita, Kans.

MR. GEORGE F. SCHREIBER, architect, formerly of 914 Merchants Bank Building, is now located in his new office at 801 Architects Building, 333 North Pennsylvania Street, Indianapolis, Ind.

MR. LLOYD C. OWNBEY, architect, has recently opened an office at 7018 Passaic Street, Huntington Park, Calif. He requests that manufacturers' literature be sent to this address.

WE REGRET to announce the death of Frank Goodwillie, A. I. A., on Monday, October 7th, at Montclair, N. J. Mr. Goodwillie was a member of the firm of Goodwillie & Moran of Montclair, who also have offices at 56 West 45th Street, New York City.

MR. FRANK HENDERSON, manager of the Cleveland office of the Combustion Engineering Corporation, died suddenly on September 25th, in his fifty-third year. He was born at Tuscola, Ill., February 11th, 1876, and joined the Green Engineering Co. in 1898.

THE OFFICE of Shand & Wirtz, 710½ St. Germain Street, St. Cloud, Minn., will now be maintained by Mr. C. K. Shand in the Webber Building. Mr. Wirtz has left to go with another firm.

MR. CLARENCE W. IRWIN, architect, has opened offices at 526 Lafayette Building, Waterloo, Iowa, and requests manufacturers' literature.

MR. FRANK A. SEXTON, formerly with Wolf, Sexton, Harper & Trueax, Inc., architects, has now opened his own office at 157 East Erie Street, Chicago, Ill. He requests that manufacturers' literature be sent to that address.

MR. JOHN R. GIESKE, architect, formerly of the Holswade Building, is now located in his new offices at 1082–6th Avenue, Huntington, W. Va.

MR. SIDNEY L. DAY, architect, whose offices were formerly at the First Huntington National Bank Building, has moved to the First Huntington National Bank Arcade, Huntington, W. Va.

THE ARCHITECTURAL firm of Folwell & Miller of Union Trade Building, Parkersburg, W. Va., is now practicing under the single name, J. D. Folwell.

HARRISON & TURNOCK, architects and engineers, formerly of 500 Board of Trade Building, are now located in their new offices at 1001-6 Architects Building, 333 North Pennsylvania Street, Indianapolis, Ind.

MR. I. A. WASSERSTROM, architect, formerly of 1931 East 55th Street, is now located in his new office at 6014 Euclid Avenue, Cleveland, Ohio.

CLARENCE T. MYERS, architect, announces the opening of his new offices in the Architects and Builders Building, Pennsylvania and Vermont Streets, Indianapolis, Ind.

CLARE C. HOSMER, architect, announces the removal of his offices from Sarasota, Fla., to Houston, Texas, where he is located on the sixth floor of the La Pearson Building.

THE ARCHITECTURAL firm, Carey & Dowling, has moved its offices from 407-8 State Office Building to 501 First National Bank Building, Mobile, Ala.

THE ARCHITECTURAL firm of William Reichert and Sidney C. Finck of Chicago has dissolved. Mr. Sidney C. Finck will continue his practice in the offices formerly occupied by the firm at 35 South Dearborn Street.

EASTMAN & BUDKE, architects, formerly of 926 Fairbanks Building, are now located in their new offices at 805 First National Bank Building, Springfield Ohio.

THE FIRM of Althouse & Jones, architects, have moved their offices from 40 West 4th Street to 1104 Farmers Bank Building, Mansfield, Ohio.

THE CONDON ENGINEERING CO., consulting engineers, have moved from 231 to 208 South LaSalle Street, Chicago, Ill.

MR. ALLEN J. KENNEY, architectural engineer, formerly of 230 Wisconsin Avenue, is now located at 750 Oakland Avenue, Milwaukee, Wis.

MR. WALTER E. PETTIT, architect, formerly of 150 East Broad Street, has moved into new offices at 2569 North High Street, Columbus, Ohio, and the new firm name is Pettit & Oman.

J. H. ZOLLER has moved his architectural office from 2347 Taylor Road, Cleveland Heights, Ohio, to 3390 Henderson Road.

JOSEPH J. GUNTHER has removed his architectural office from The National Bank Building of Far Rockaway, N. Y., to the Bank of Valley Stream Building, Rockaway Avenue, Valley Stream, N. Y.

V. J. WAIER, architect and engineer, has moved his architectural office from Room 738, Dime Bank Building, Detroit, Mich., to Room 1538 in the same building.

JULIUS WENIG, registered architect, announces the removal of his offices from the Washington Savings Bank Building to the Edmonds Building, 917 Fifteenth Street, Northwest, Washington, D. C.

LUCIUS R. WHITE, JR., formerly at Hearst Tower Building, is now located at Suite 1700-1702 Court Square Building, N. E. corner of Lexington and Calvert Streets, Baltimore, Md.

A roof to shelter wings at rest

Where air lanes end, spacious hangars wait to shelter wings at rest. These great buildings with their problems of special roof design, must have roof materials with special characteristics.

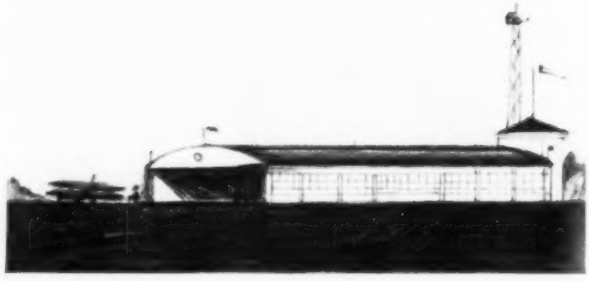
Sheetrock Pyrofill poured-in-place roof construction is especially adaptable for use on hangars or on any other type of building where wide span openings are essential.

This roof construction consists of permanent Sheetrock forms supported on sub-purlins, and a poured slab of Pyrofill reinforced with electrically welded steel mats.

Sheetrock Pyrofill advantages are numerous. Pyrofill roofs weigh but 12 lbs. per square foot, about one-third the weight of concrete. This reduction in dead load permits of considerable savings in all supporting members. Pyrofill provides a fireproof roof deck. Its gypsum content ranks among the highest in insulating value of structural building material.

The smooth undersurface of Sheetrock has the appearance of a finished ceiling. It diffuses light evenly. It is entirely free from dusting or flaking.

An engineering and construction service is available at all times to assist with designs and estimates.



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OUTWARD BEAUTY - INWARD STRENGTH!

BEAUTY in proportion, beauty in appointments, beauty in marble and bronze—yet back of it all lies the strength of solid steel. Modern banks, with the help of their architects, are raising the entire standard of commercial architecture—lending permanence to outward beauty by building on inward strength.

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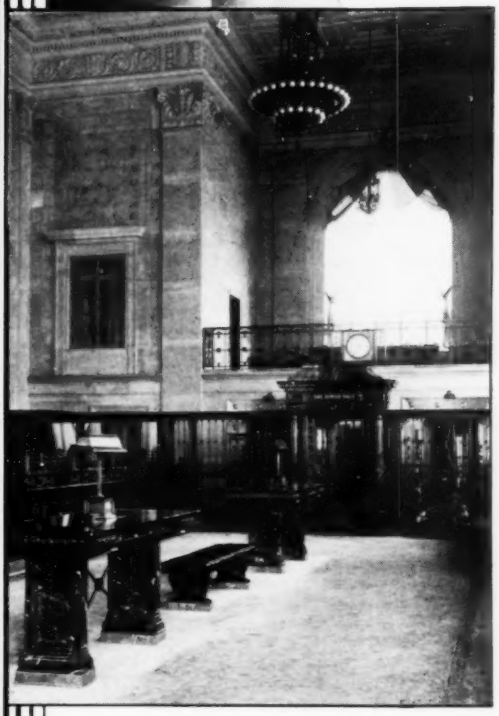

Two Diebold Vault Doors installed in Barclay Westmoreland Trust Co., Greensburg, Pennsylvania

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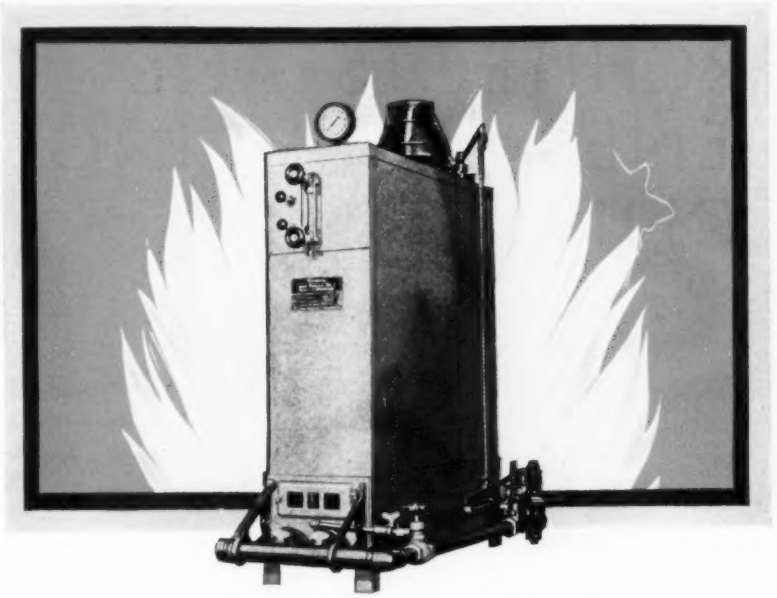

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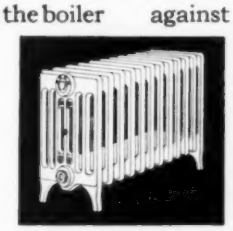

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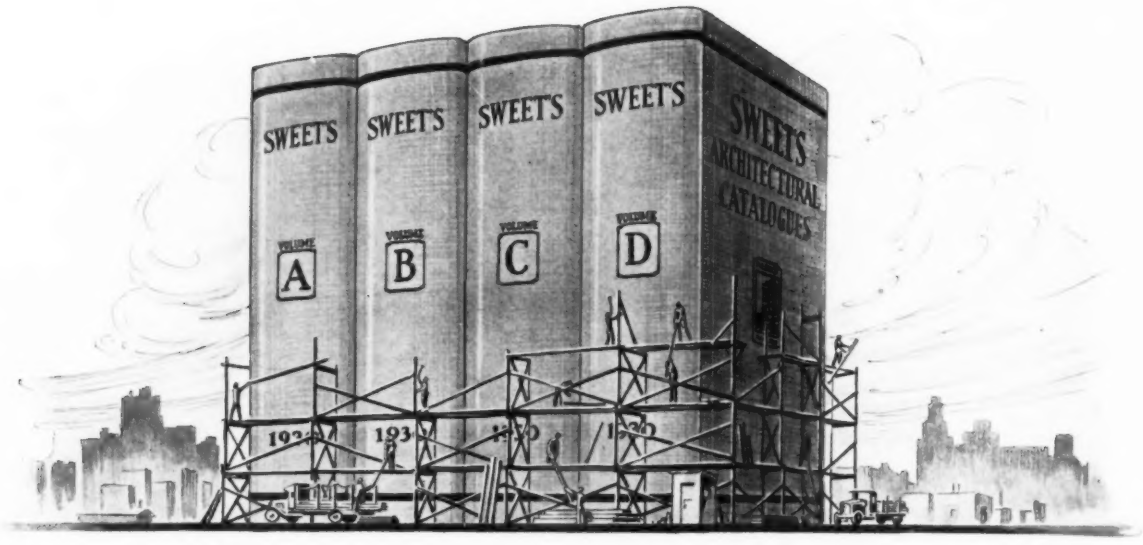

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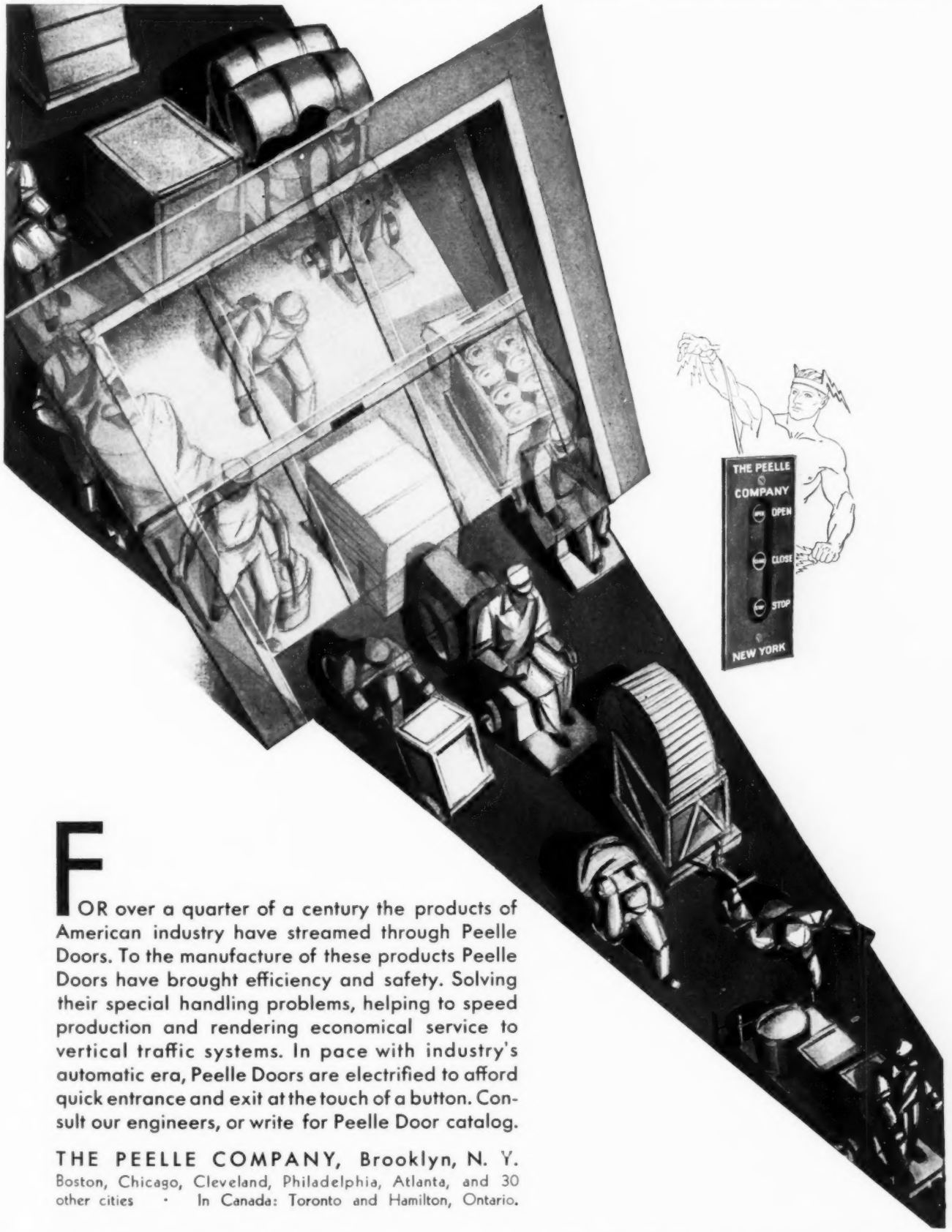

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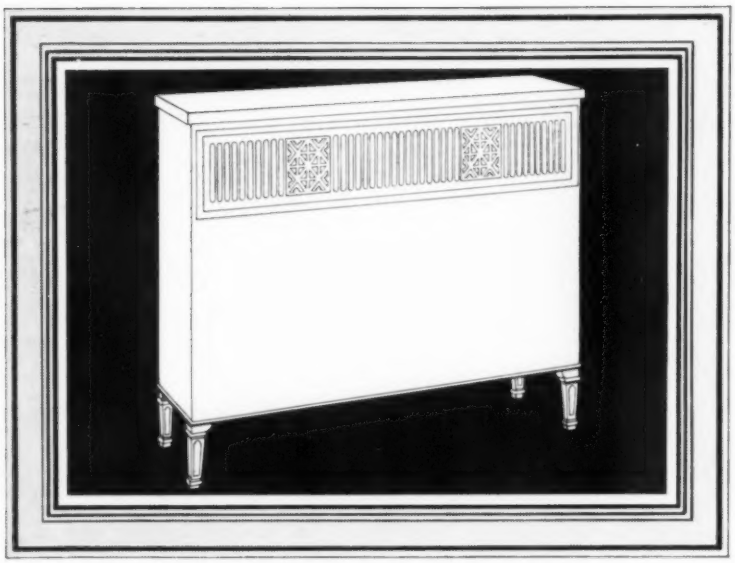

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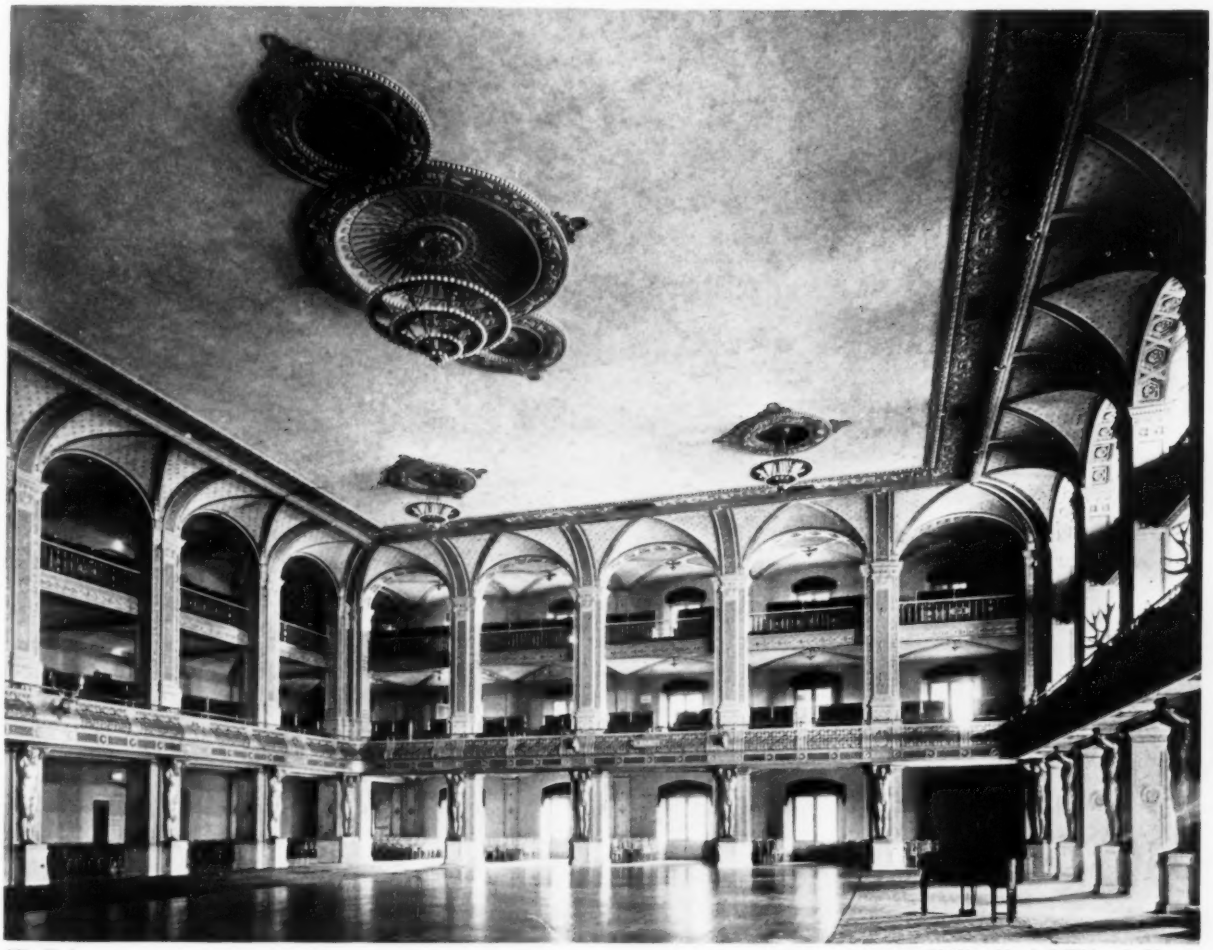

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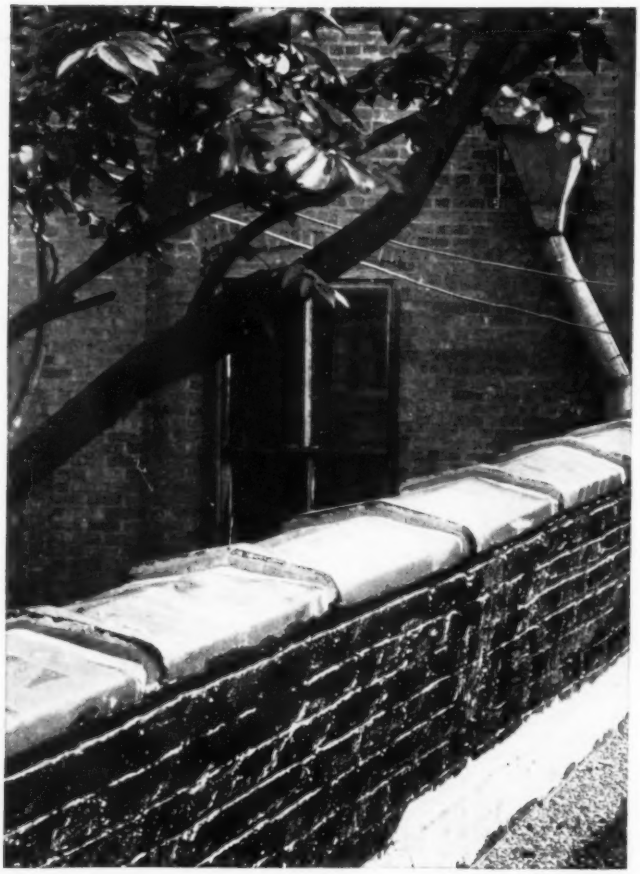

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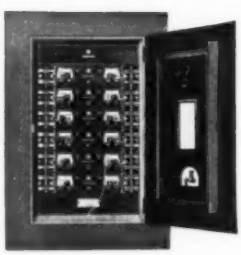

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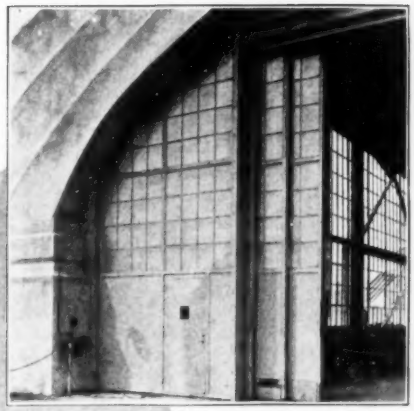

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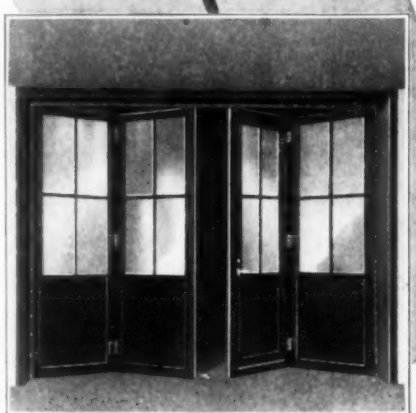

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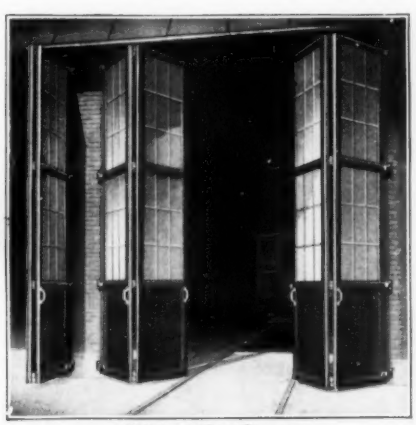

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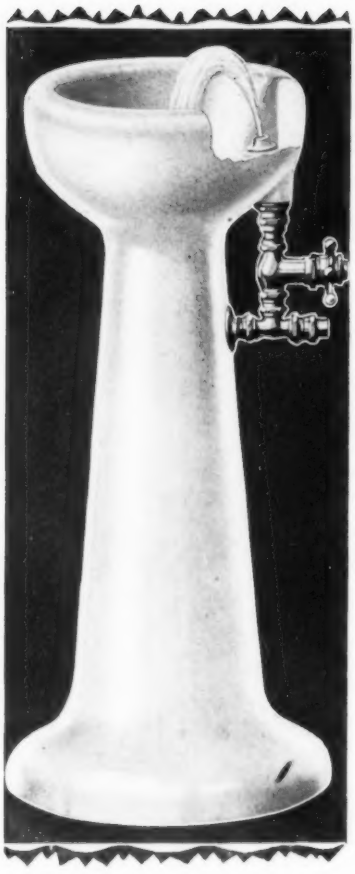

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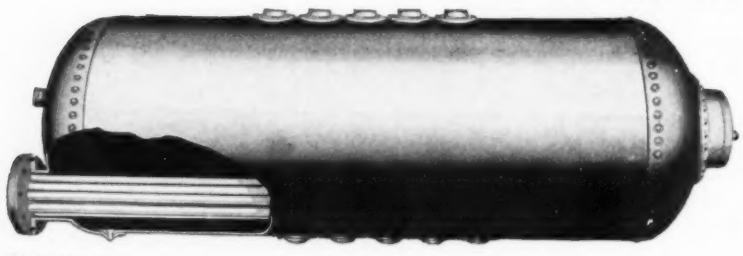

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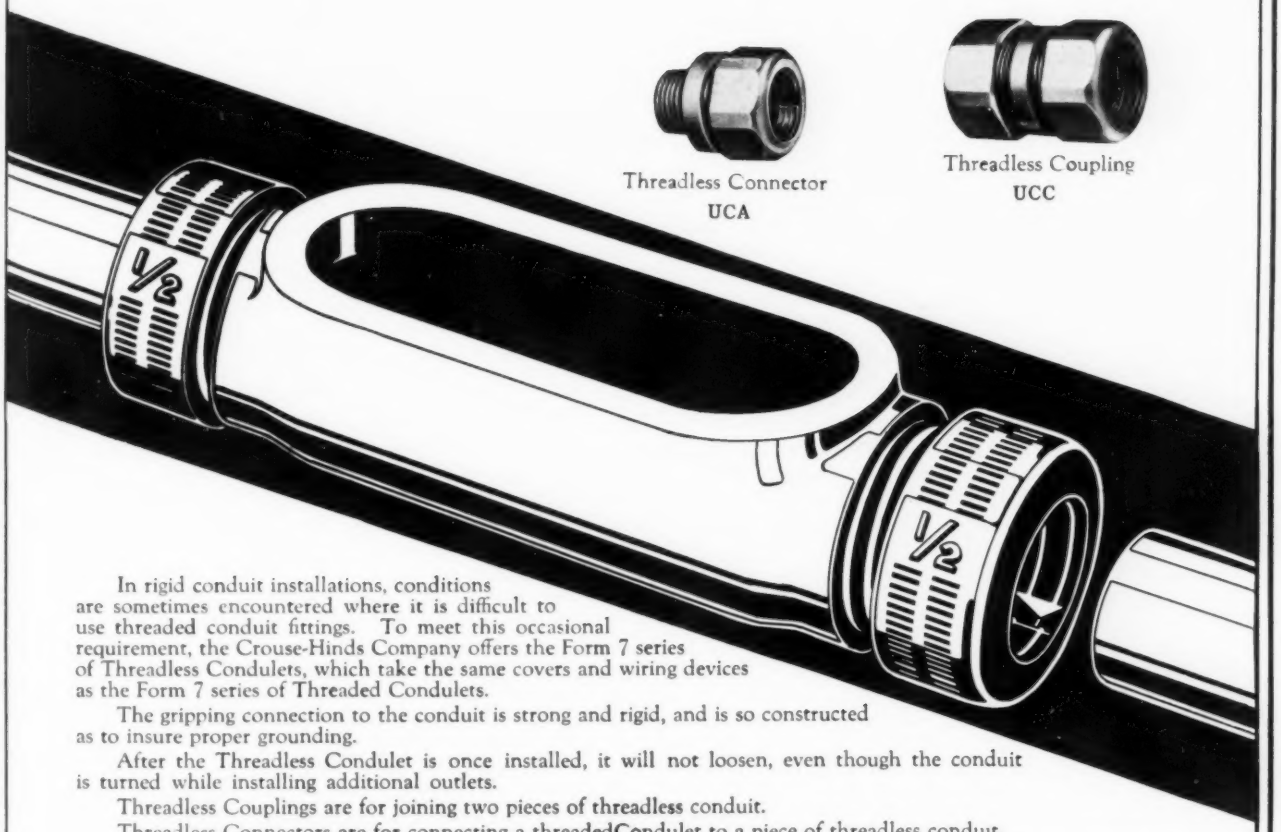

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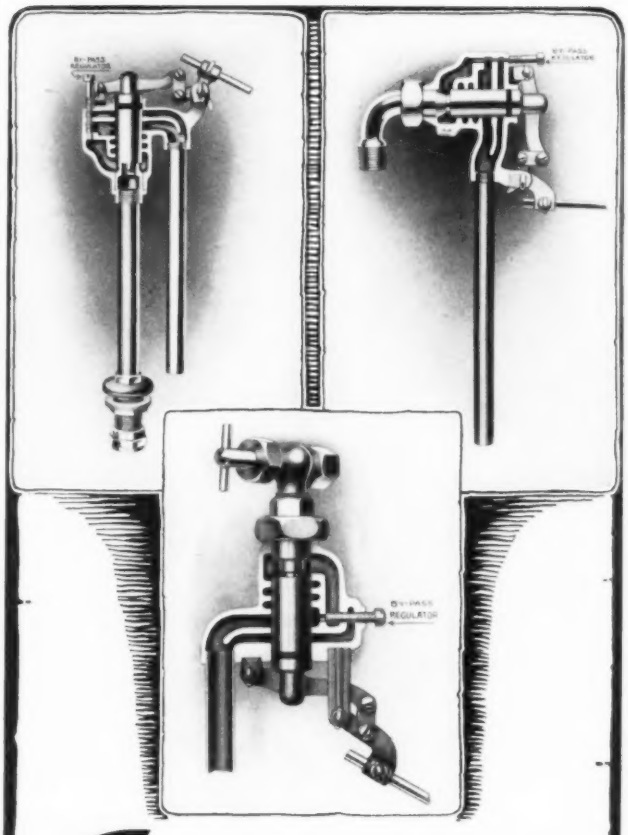

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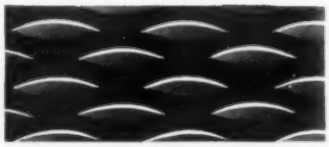

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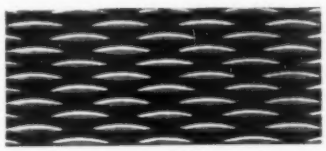

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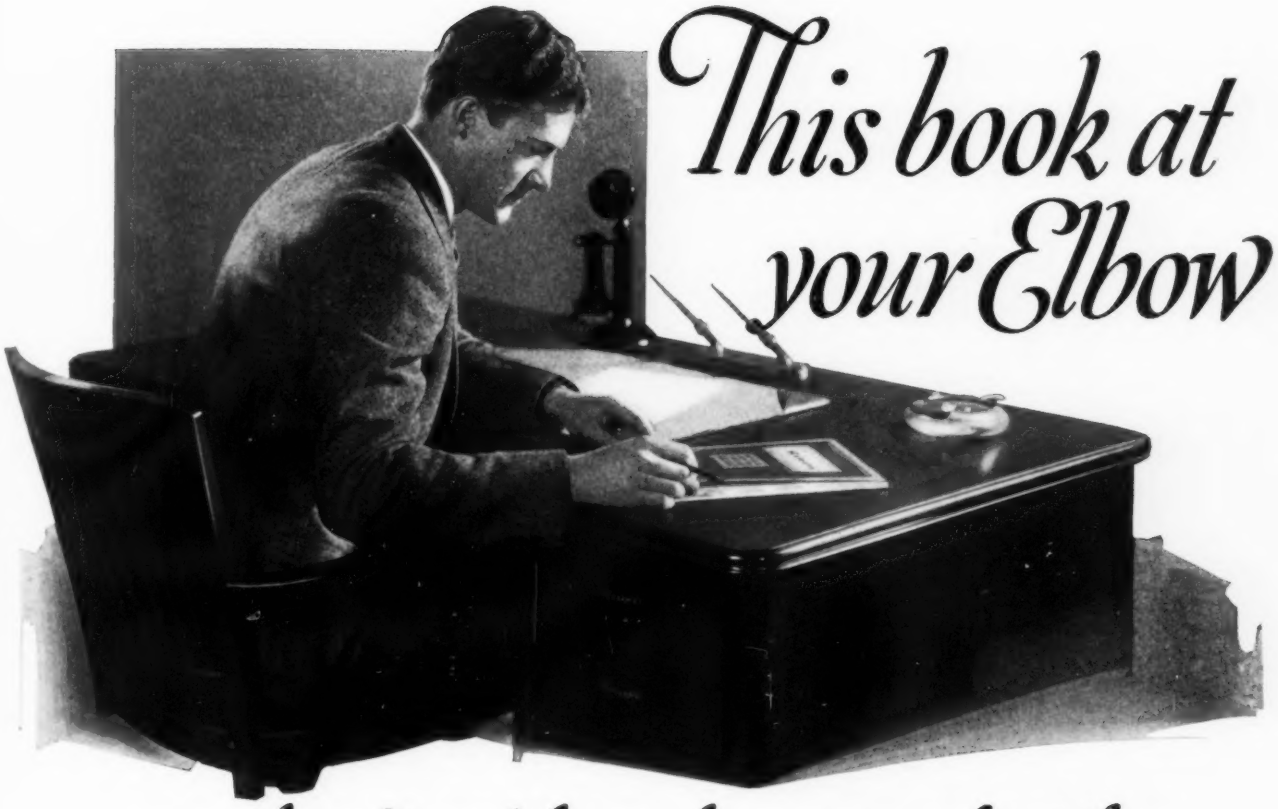

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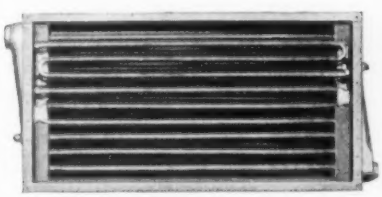

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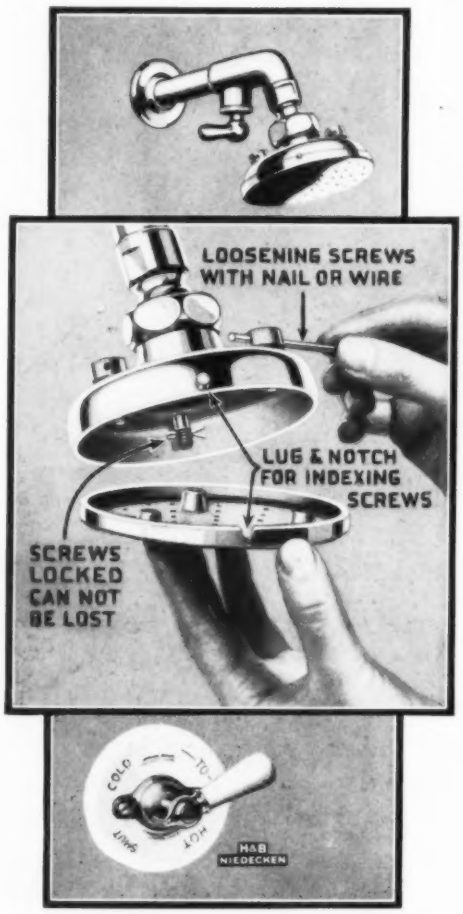

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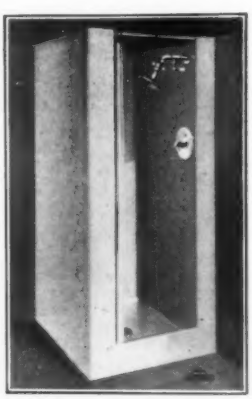

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TABLE OF CONTENTS

Chapter I—Introductory.
Chapter II—The relative values of historic methods.
Chapter III—The form of artistic impulse that should control architectural color effect.
Chapter IV—Color phenomena that are active in polychromatic effect.
Chapter V—The architectonic objective in Greek polychromy.
Chapter VI—The relation that must be established between structural effect and polychromatic effect.
Chapter VII—The technique of architectural polychromy.
Chapter VIII—The development of color interest through the manipulation of plastic form.
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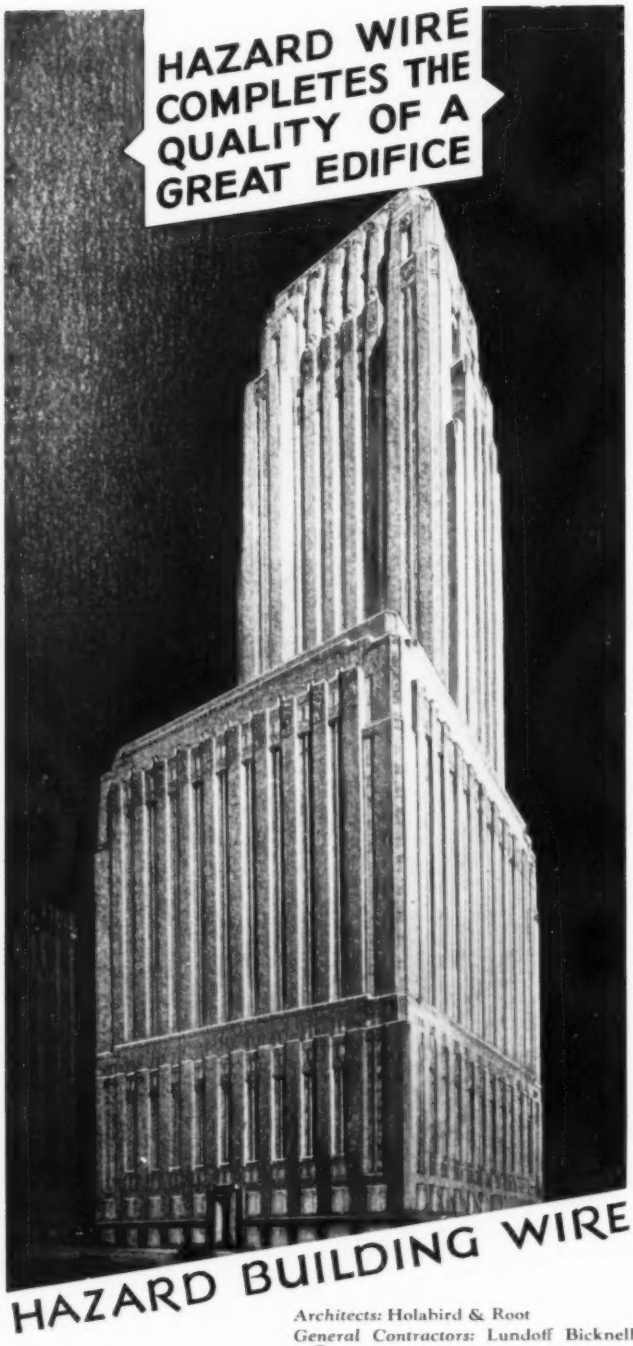

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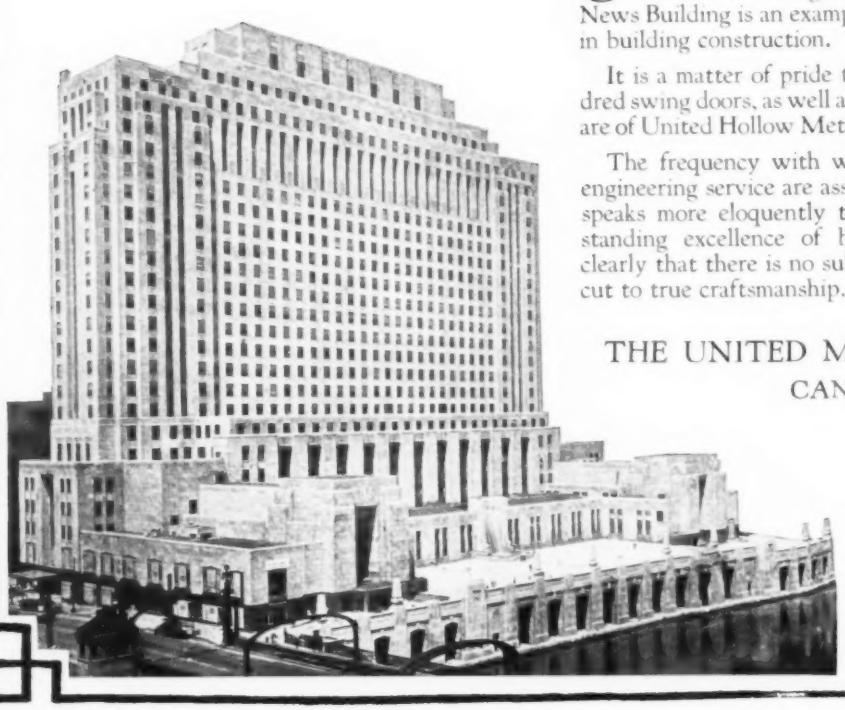

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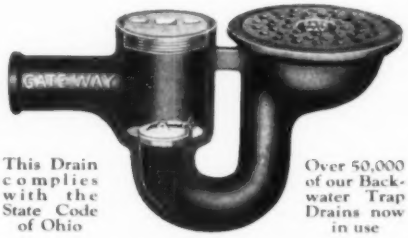

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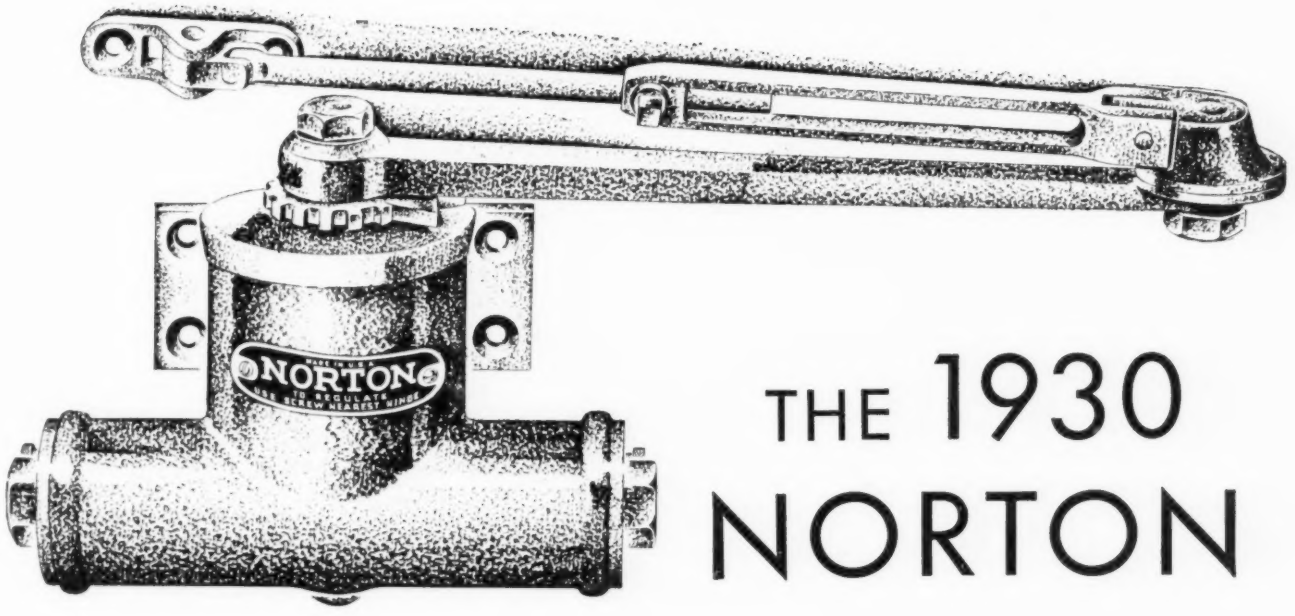

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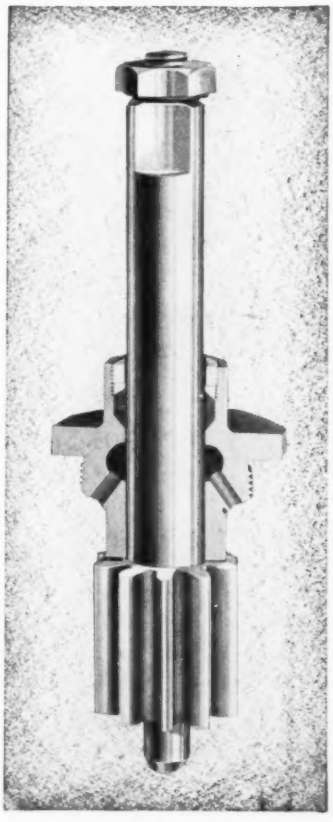

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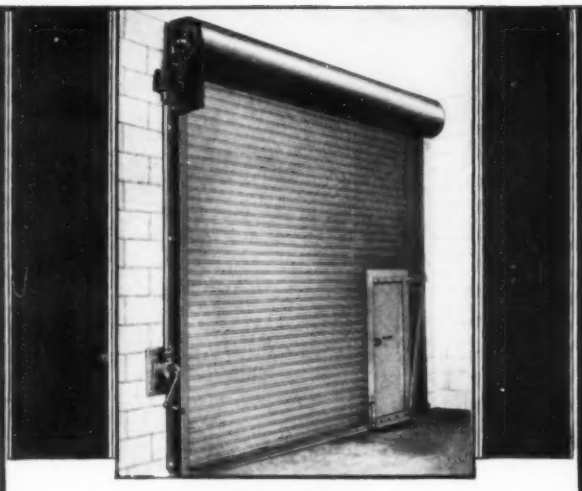

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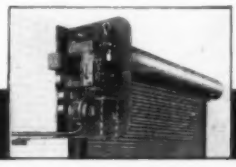

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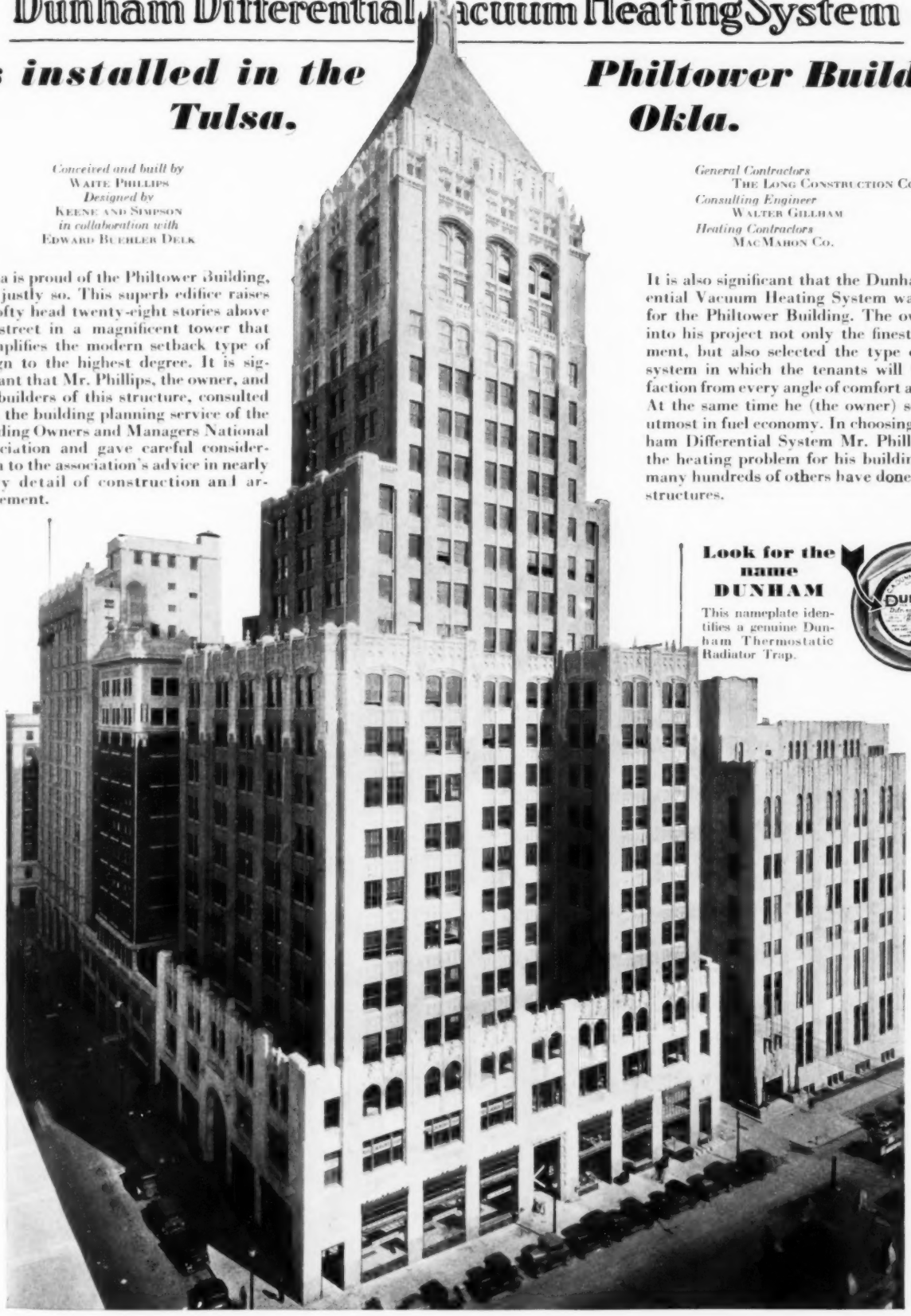

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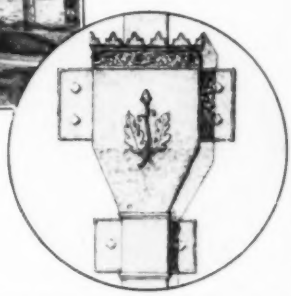

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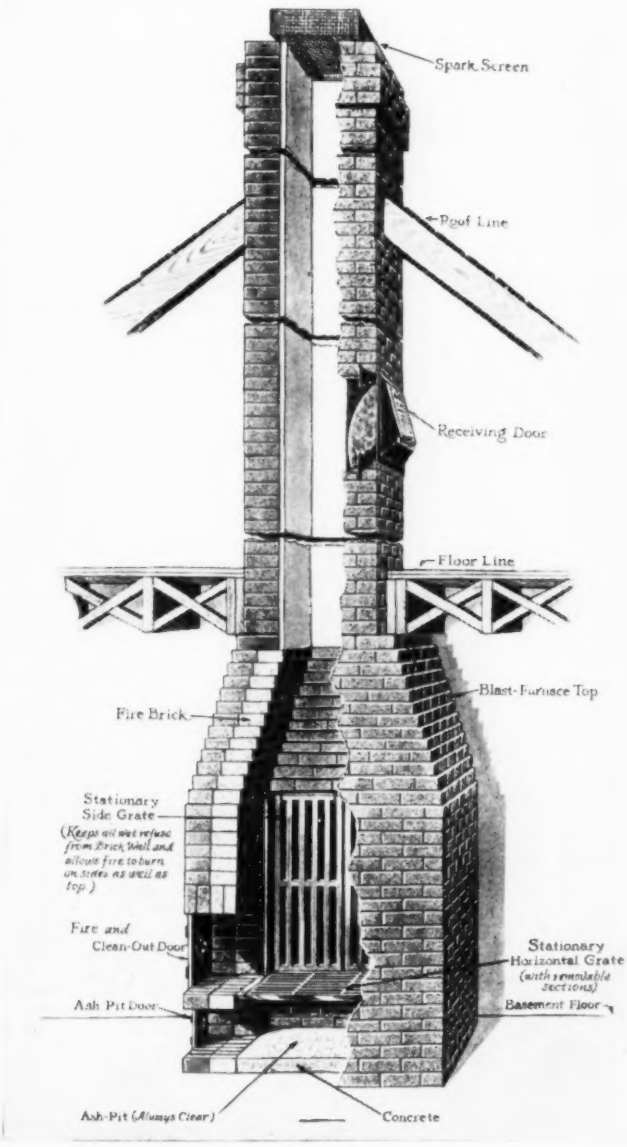

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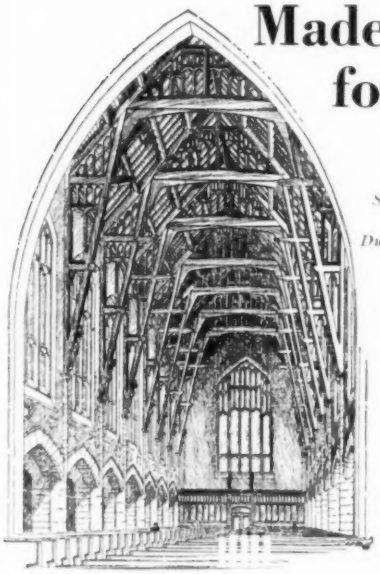

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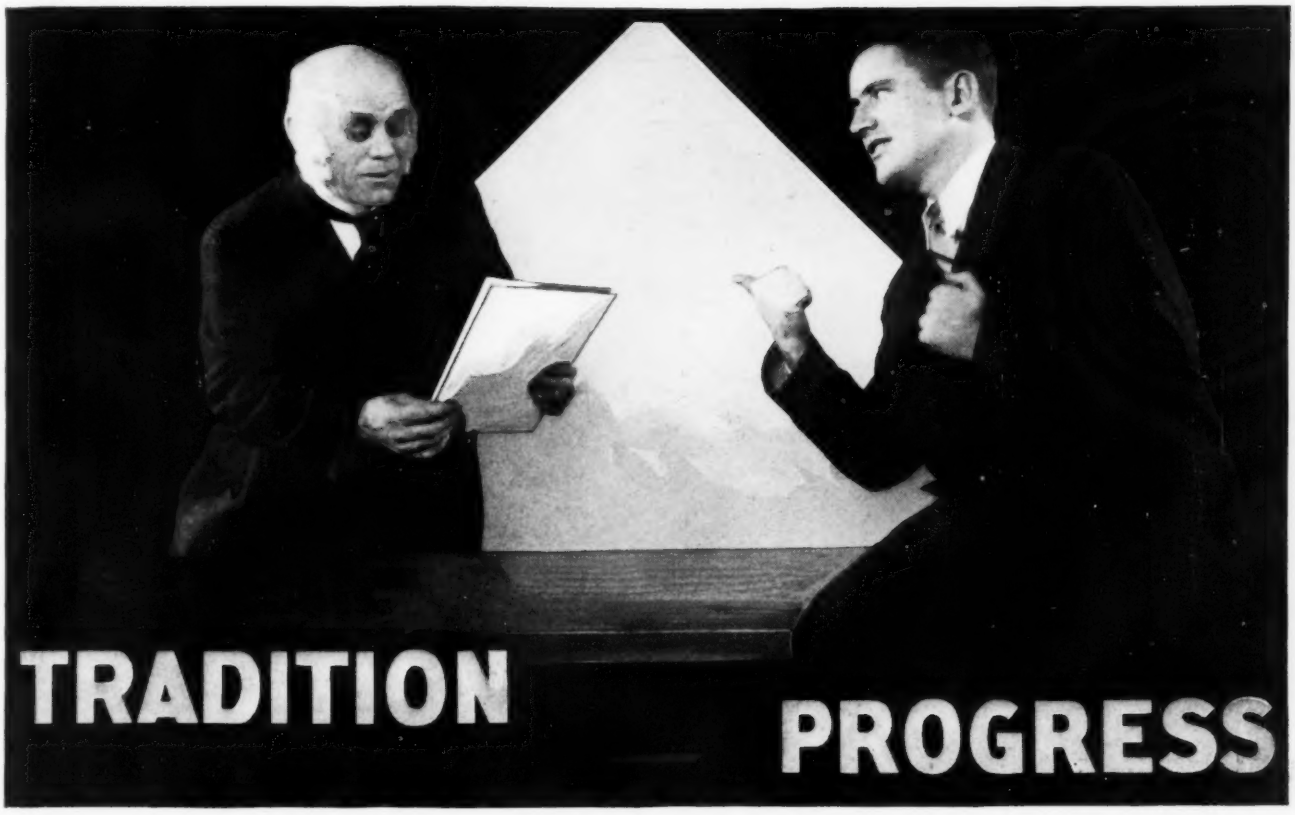

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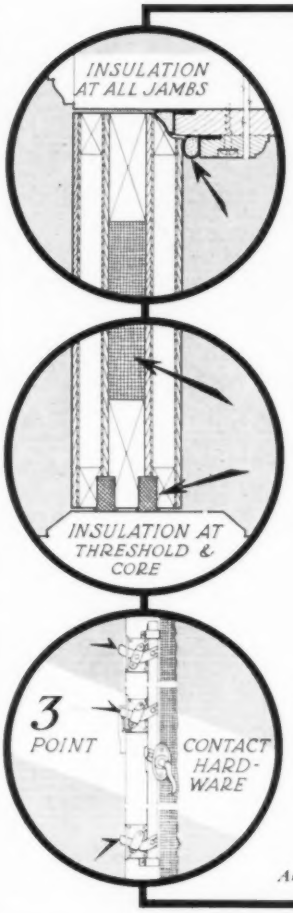

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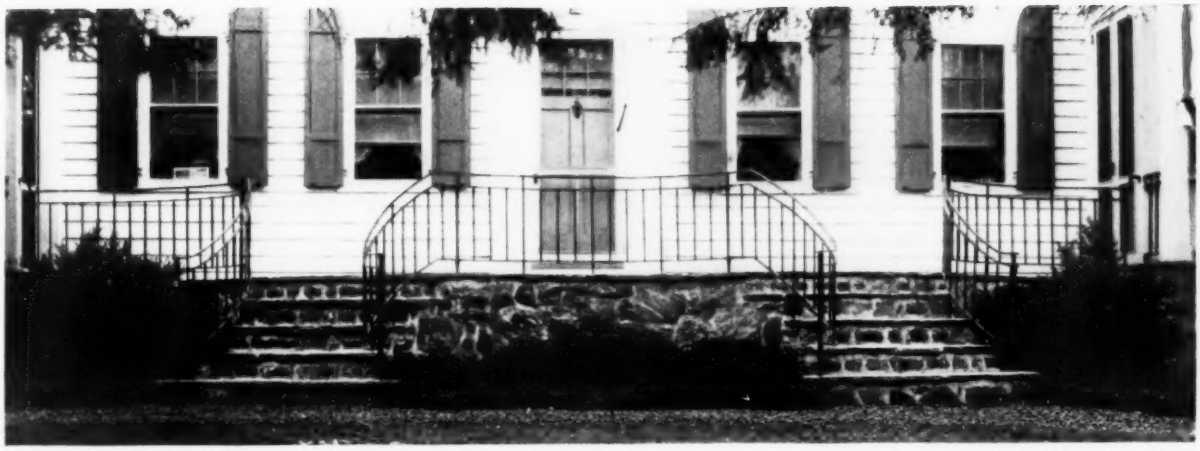

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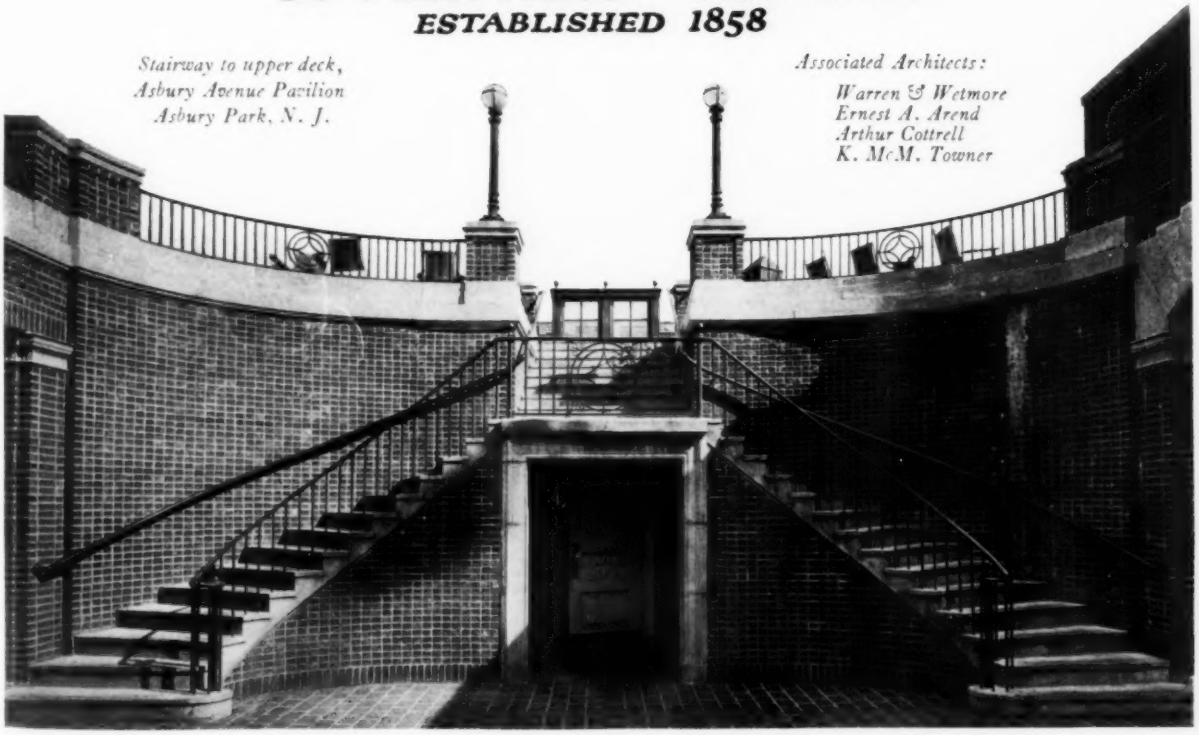

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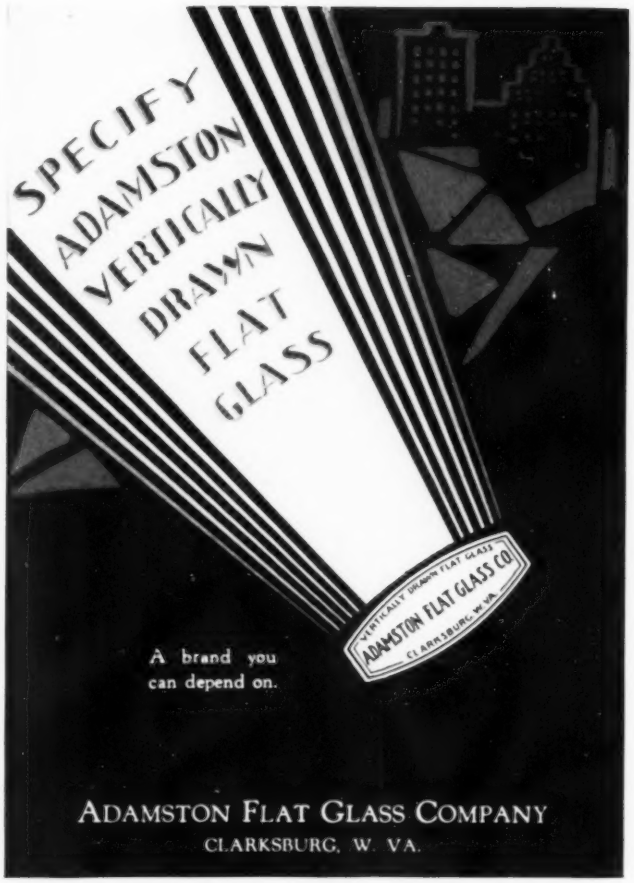

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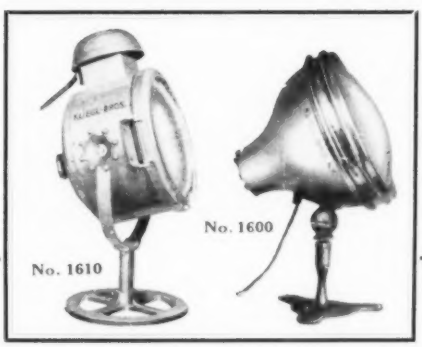

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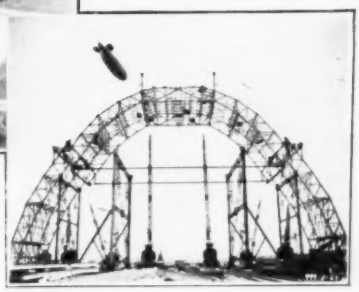

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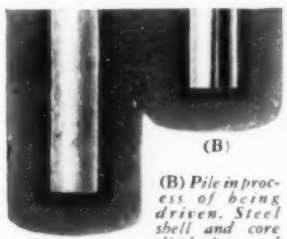
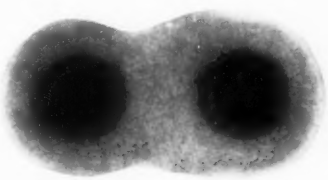
Canadian MacArthur Concrete Pile Co., Ltd., Montreal

MacARTHUR
CONCRETE PILE CORPORATION

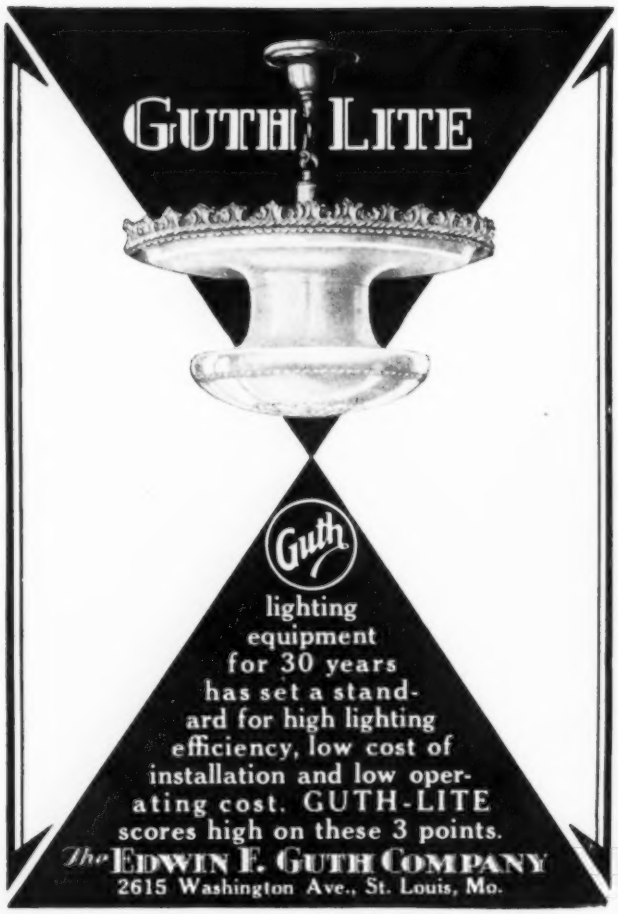
(A) *Completed pile, formed by compressing a workable, dry mix concrete under 7 tons pressure. This forces dense concrete into intimate contact with surrounding soil, giving maximum skin friction. Shading shows relative compression of soil due to driving and compressing.*



(B) *Pile in process of being driven. Steel shell and core displacing and compacting surrounding soil.*



Soil displaced by pile being driven follows line of least resistance which is AWAY *from the densely compacted soil surrounding the finished pile*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lighting equipment for 30 years has set a standard for high lighting efficiency, low cost of installation and low operating cost. GUTH-LITE scores high on these 3 points.
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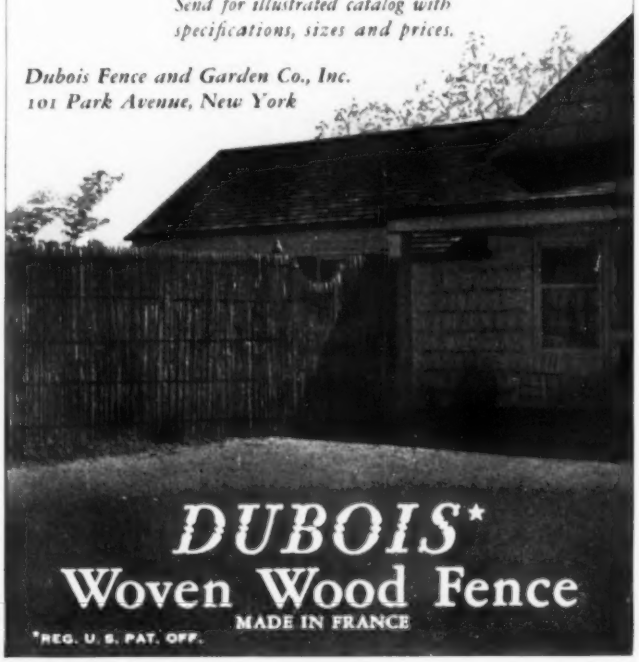

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Woven Wood Fence
MADE IN FRANCE
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safe
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FOR SANITARY WORK, STAIR TREADS AND LANDINGS
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LIST OF NEW BOOKS ON ARCHITECTURE AND THE ALLIED ARTS

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ARCHITECTURE

CRAM AND FERGUSON, *architects*

The work of Cram and Ferguson, architects, including work by Cram, Goodhue and Ferguson, with an introduction by Charles D. Maginnis. New York: The Pencil Points press, inc., 1929. 10 p. col'd front., 343 plates. f°. $25.00. 724.973

The introduction by Charles D. Maginnis is mainly an appreciation of Ralph Adams Cram. The many plates illustrate, by photographs and architects' drawings, Gothic and Georgian churches, school and university buildings, furniture, details, and residencies.

HERBST, RENE.

Nouvelles devantures et agencements de magasins. 4e serie. Paris: Charles Moreau, 1928. 6 p. 54 plates. obl. 4°. 100 fr. 725.2

A collection of plates which illustrate modern shopfronts as exemplified chiefly by characteristic buildings in Paris.

LLOYD, NATHANIEL.

Building craftsmanship in brick and tile and in stone slates. Cambridge: University Press, 1929. ix, 99 p. illus. 4°. 15s. 721

An exposition by word and picture of what constitutes good building and the charm of texture and color. Illustrated by photographs and drawings, many in great detail.

LONDON, COUNTY COUNCIL.

The parish of All Hallows Barking. Part 1. London: The London County Council, 1929. xvi, 100 p. front., illus., plates, plans. 4°. (London. County Council. Survey of London. v. 12.) 31s. 6d. 726.5

Volume 1 has added title page: The church of All Hallows Barking, being the twelfth volume of the Survey of London, by Lilian J. Redstone and members of the London Survey Committee. Bibliography, p. 92.
A detailed historical and architectural account of this London church, its building and its furniture. Thoroughly illustrated by watercolors, sketches, measured drawings and photographs. Well indexed.

MALLET-STEVENS, ROBERT.

Grandes constructions. Paris: Charles Moreau, 1929. 5 p. 2 vols. of 50 plates each. f°. (L'art international d'aujourd'hui.) 100 fr. per vol. 724.9

A pictorial survey of contemporary building of the modernist type with examples from various European countries. Includes a few American buildings.

NOVI, A.

Détails d'architecture intérieure présenté par A. Novi. Paris: Charles Moreau, 1929. 6 p. 53 plates. f°. (L'art international d'aujourd'hui.) 100 fr. 729

Interior details of modernist domestic architecture of France, Germany and Holland, chosen to emphasize its "picturesque" quality.

REVESZ, MAGDA (ALEXANDER).

Die alten Lagerhäuser Amsterdams; eine künstliche Studie. Haag: M. Nijhoff, 1928. xii, 190 p. front., illus. (incl. Facsims., plans.) f°. 16 gulden 725.21

Types, history and description of old Amsterdam warehouses and commercial buildings with corresponding types elsewhere in Holland, Belgium and the Hansa cities. Illustrated from photographs, drawings, plans, prints and watercolors.

SEXTON, RANDOLPH WILLIAMS.

The logic of modern architecture: exteriors and interiors of modern American buildings. New York: Architectural Book Pub. Co., 1929. 4, 133 p. front., illus., plans. f°. $8.00. 724.973

A compendium of information and a collection of plates illustrating domestic and commercial architecture in the United States. The illustrations show plans, models, architects' drawings, exterior and interior views.

WEIGERT, HANS.

Das Strassburger Münster und seine Bildwerke; herausgegeben durch Richard Hamann; beschrieben von Hans Weigert. Berlin: Deutscher Kunstverlag, 1928. 118 p. front., illus. (incl. facsim., plan), 88 plates. f°. 28 marks. 726.6

Bibliography, p. 117-118.
A history and description of the cathedral of Strasbourg, emphasizing especially its sculptured detail.

WENDEHACK, CLIFFORD CHARLES.

Golf and country clubs: a survey of the requirement of planning, construction and equipment of the modern club house. New York: William Helburn, 1929. liii p. 157 plates. f°. $15.00. 728.4

ALLIED ARTS

METROPOLITAN MUSEUM OF ART, NEW YORK.

The architect and the industrial arts: an exhibition of contemporary American design. New York: The Museum, 1929. 83 p. illus., 14 plates. 8°. 50 cents. 747

This is the official catalogue of the Museum exhibit, with preliminary notices by Edward Robinson, Leon V. Solon and Richard F. Bach. Each contributing architect has a foreword on his exhibit, and there is a full list of designers and manufacturers.

Forest Close at Forest Hills, Long Island, is a community of 38 attractive homes grouped around a central garden or park. The homes range in value from $16,000 to $27,500. Cord-Meyer Development Company, Builders; Robert Tappan, Architect.

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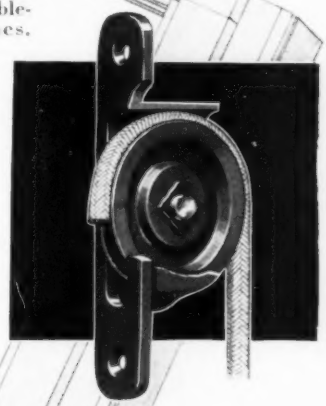

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NOTES IN BRIEF

OUR CONTRIBUTORS

"Above" we see none other than our contributor, *Mr. George W. Rustay*, in the act of measuring the façade of a palace in Mexico City, with the aid of the fire department. *Mr. G. Richard Garrison*, his companion, is not in the picture—idle firemen, it is reported, "were at the moment teaching him a few Spanish words that any gringo ought to know."

The sketches and photographs reproduced in the intaglio section of this number represent mainly a type of house that in Mexico is known as "mason's baroque" though more accurately it is not baroque at all but the style of simple houses at a contemporary period.

The work of measuring, drawing and photographing these structures was undertaken on a commission from the Mexican department of education; and it is intended by the authors to publish their results in book form in the United States.

Mr. Fiske Kimball hardly needs an introduction to the readers of the Architectural Record. As the director of the Philadelphia Museum of Art he has had unexcelled advantages in studying the problems of museum arrangement and management; as an architect he is capable of translating these problems into practical building terms. Mr. Kimball has taught architecture at the universities of Harvard, Michigan, and Virginia, and is the author of "The Domestic Architecture of the American Colonies" "American Architecture" and numerous other books and articles.

A MUSEUM OF MODERN ART

The "Museum of Modern Art" in New York City opened its doors on November 8 and ended what was a scandal of long standing: that the city of sky-scrapers and of art dealers should possess no permanent public facilities for the display of modern painting and sculpture, and that it had not even house room for such important exhibits as the annual Carnegie International that shows in most other large American cities.

The Museum of Modern Art is sponsored by seven well-known collectors; the chairman is Mr. A. Conger Goodyear, the secretary Mr. Frank Crowninshield, and the treasurer Mrs. John D. Rockefeller, Jr. Mr. Alfred H. Barr, Jr., formerly of the Fogg Museum at Harvard, is the director.

The opening exhibition consists of ninety-eight paintings, drawings and water colors by Paul Cézanne, Paul Gauguin, Georges Seurat and Vincent Van Gogh, and so represents the close of the nineteenth century.

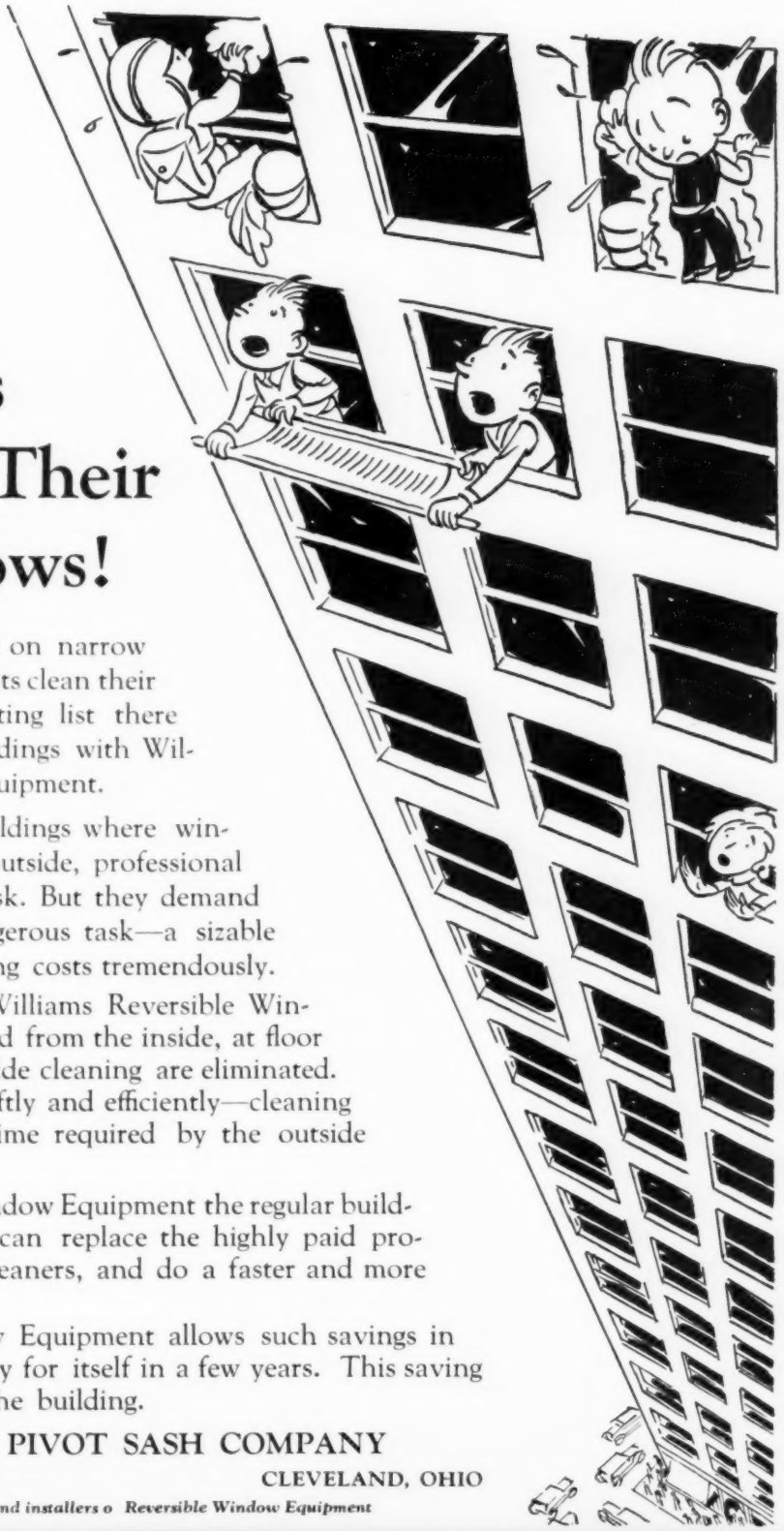
CALENDAR OF EVENTS

GENERAL ANNOUNCEMENTS

1929 Nov. 14-Dec. 12	Exhibit of the work of Holabird and Root, Architectural League, New York.
1930 Jan 18-30	The second International Exhibition of Building Trades and Allied Industries at Brussels.
Jan. 24	Beaux-Arts Ball, Hotel Astor, New York.
Jan. 27-31	International Heating and Ventilation Exposition at the Commercial Museum, Philadelphia, under the auspices of the American Society of Heating and Ventilating Engineers.
March-April	Fifth International Exhibition of Housing and Modern Industrial Applied Arts at Nice, France.
May 20-Oct. 1	Exhibition of Modern Industrial and Industrial Arts at Stockholm, Sweden.
May 26-30	Fifth International Congress of Building and Public Works, London.
June 19-30	The fourth Pan-American Congress of Architects and Architectural Exhibition at Rio de Janeiro.
September	International Congress of Architects at Budapest.

COMPETITIONS

1930 Jan. 15	Last date on which nominations may be received of entrants for the Le Brun Travelling Scholarship Competition for 1930. Address Le Brun Scholarship Committee, Room 530, 101 Park Avenue, New York.
March 1	Closing date of annual competition for the Prize of Rome in architecture, painting, sculpture and musical composition. The competitions are open to unmarried men not over 30 years of age who are citizens of the United States. The stipend of each fellowship is $1,500 a year with an allowance of $500 for transportation to and from Rome and $150 to $300 for materials and incidental expenses. Residence and studio are provided at the Academy, and the total estimated value of each fellowship is about $2,500 a year for three years, with opportunity for extensive travel. Entries for competitions will be received until *March first*. Circular of information and application blanks may be obtained by addressing Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York, N. Y.



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IF tenants had to crawl out on narrow ledges and from dizzy heights clean their own windows—what a waiting list there would be for offices in buildings with Williams Reversible Window Equipment.

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With Williams Reversible Window Equipment the regular building staff at a low wage rate can replace the highly paid professional outside window cleaners, and do a faster and more efficient job.

Williams Reversible Window Equipment allows such savings in cleaning costs that it will pay for itself in a few years. This saving continues for the life of the building.

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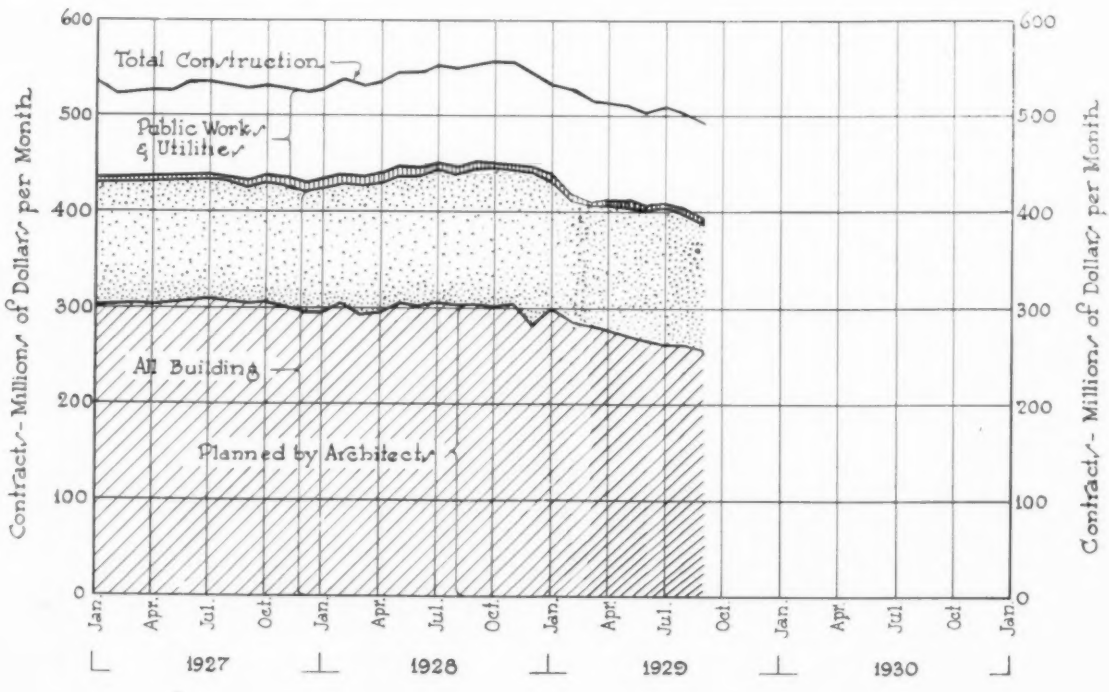
CONSTRUCTION STATISTICS

From the records of F. W. Dodge Corporation, Statistical Division. The figures cover the 37 states east of the Rocky Mountains and represent about 91 per cent of the country's construction volume.

First Nine Months, 1929

	TOTAL CONTRACTS		WORK PLANNED BY ARCHITECTS		
	Number of Projects	Valuation	Number of Projects	Valuation	Per Cent of Total
Commercial Buildings	18,797	$ 729,894,500	8,007	$ 557,891,400	76
Industrial Buildings	5,068	588,582,400	1,801	153,805,700	26
Educational Buildings	3,776	299,471,800	3,036	285,771,300	95
Hospitals and Institutions	889	106,486,600	654	92,842,000	87
Public Buildings	1,071	93,916,700	611	85,999,700	92
Religious and Memorial	1,794	83,696,000	1,293	74,876,500	89
Social and Recreational	2,004	109,811,800	1,217	88,125,700	80
Residential Buildings	90,577	1,550,364,600	23,171	935,217,600	60
Total Building	123,976	$3,562,224,400	39,790	$2,274,529,900	64
Public Works and Utilities	15,335	1,039,043,200	279	30,980,800	3
Total Construction	139,311	$4,601,267,600	40,069	$2,305,510,700	50
Total construction, first eight months, 1928	156,051	$5,126,944,100	46,999	$2,806,525,000	55



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MASS production methods have been applied to the manufacture of Penberthy Automatic Electric Sump Pumps—the great increase in demand during the last 12 months has made this possible. Added economies result from material purchases in large quantities. These cost reductions are being passed on to the trade and the consumer.

Although the persistent rise of the sales curve indicates the soundness of Penberthy Sump Pump design and construction, certain details have been improved to produce even better pumps.

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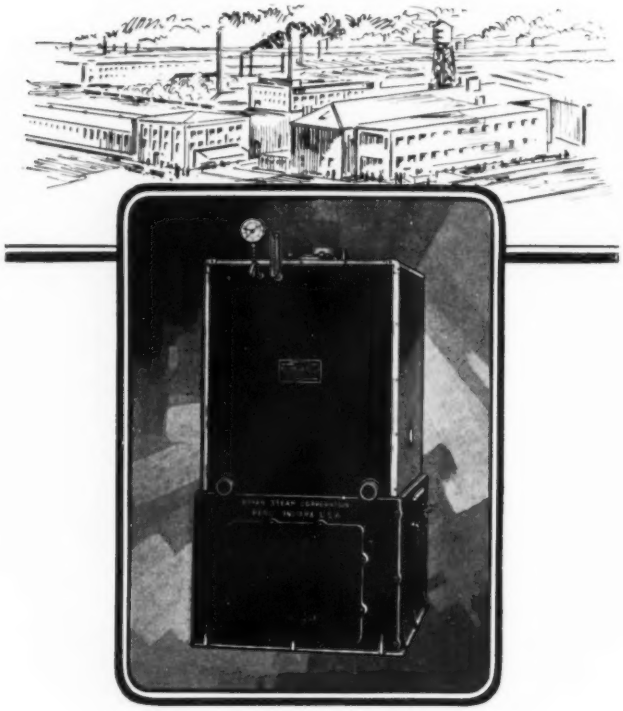

PRODUCTION! is the cry in all factories today. It is highly necessary that factories be heated evenly and that the temperature be kept at a constant level . . . and this job must be accomplished economically. Any factory—no matter what size—can be heated perfectly with Bryan Boilers.

This solves a difficult problem for the architect when specifying a heating installation for industrial plants.

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RECENT TRADE PUBLICATIONS

ISSUED BY MANUFACTURERS OF CONSTRUCTION MATERIALS AND EQUIPMENT

[These may be secured by architects on request direct from the firms that issue them, free of charge unless otherwise noted.]

HEATING SYSTEMS

"Fuel Burning and Steam Generating Equipment." Unite type pulverized fuel system. Storage type pulverized fuel system. Water screen. Specific installations. Typical plant layout. Advantages: economy; ability to burn practically any fuel, including oil and gas; extremely high capacity available almost immediately; ease of operation; problem of ash removing greatly simplified. Burner for horizontal firing. Air preheater; fine furnace. Seven types of stokers. Combustion steam generators. Boilers of every type. Factors to be considered when installing steam-generating units. Combustion Engineering Corp., 200 Madison Ave., N. Y. C. 8½ x 11. 16 pp. Ill.

UNDERFLOOR WIRING

"Fiberduct for Underfloor Wiring." The Raceway. Advantages: non-corrosive, permanently accessible for the installation of additional outlets. The Junction Box of cast iron, equipped with an adjustable brass cover. Brass underfloor wiring layouts. General Electric Co., Merchandise Department, Bridgeport, Conn. 8½ x 10 in. 7 pp. Ill.

FIRE DOORS

"Door ways." Corrugated sheet metal fire doors. Tin clad fire doors. Single link flat track fire door fixture for single sliding doors, incline track. Two link round track fire door fixtures. Automatic fire door fixtures for swinging doors in pairs. Fusible link. Ball bearing trolley. Specific installations. Elevator door electrical interlocks. Various types fire door hardware. Complete garage hardware sets. Richards-Wilcox Manufacturing Co., Aurora, Ill. 9 x 5 in. 24 pp. Ill.

AEROFIN

Bulletin No. 29. Design and construction. Tabular data: final temperatures and condensations at various pressures, friction, physical data, casing dimensions. General engineering data, piping diagrams. Temperature effects chart. Specific installations. Horn-Shafer Co., Baltimore, Md. 11 x 8½ in. 131 pp. Ill.

GAS BOILERS

"Architects Handbook of Gas Boilers." Various size boilers for small and large homes, business places, churches, etc., all with vitreous enameled jackets impervious to corrosion. Connect up with any steam, vapor, vacuum, or hot water system exactly as boiler burning other fuel. Automatic controls, including low water cut-off, gas pressure governor, steam regulator, electric motor control, throttling valve. Pin heating section. Diagram of 19 outstanding features. Dimension drawings of gas boilers. Table of ratings and dimensions. Chimney data. Hot water supply table of ratings. Tables giving maximum gallons of hot water used per 24 hours in various homes, apartment houses, hotels, restaurants, etc. Examples in the use of tables for various types of installations. American Gas Products Corp., 376 Lafayette Street, New York, N. Y. 11¼ x 8½ in. 20 pp. Ill.

The Invisible Superintendent at the Mortar Box *makes a mortar that meets* ALL *requirements*

ONE PART BRIXMENT, three parts sand (no lime, no portland) makes a mortar that has the necessary strength and plasticity and many other advantages as well:

So hard that a nail cannot be driven into the joint . . . Sets up even under water . . . Repels moisture . . . Does not cause efflorescence or fade colors . . . Uniform in strength and color . . . Makes neater brickwork due to convenient setting time and smooth-working qualities . . . Reduces cost of materials . . . Less labor in mixing (no soaking or slaking). . . Saves bricklayer's time because of unusual plasticity . . . Especially good for winter work.

Architect's handbook on request. Louisville Cement Company, *Incorporated,* Louisville, Ky.

District Sales Offices: 1610 Builders Bldg., *Chicago;* 301 Rose Bldg., *Cleveland;* 602 Murphy Bldg., *Detroit;* 101 Park Ave., *New York*

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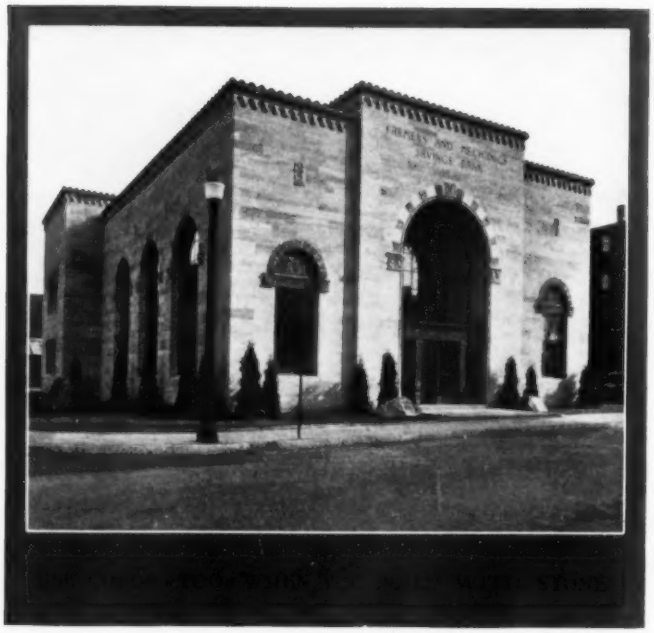
for Mortar and Stucco



Thomas M. James Company, Architects

INDIVIDUALITY

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RECENT TRADE PUBLICATIONS—(Continued)

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PUMPS

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TILE

"Architectural Faience." Color printed samples of faience glazes. Unglazed vitrocraft. Samples of decorative use. Flint Faience and Tile Co., Flint, Mich. 8½ x 11 in. 16 pp.

TIME SWITCHES

"Sauter Electric Time Switches." Detailed specifications. Uses: opening and closing main feeders for store and window lighting, starting and stopping large electric signs and heating circuits. R. W. Cramer & Company, Inc., 136 Liberty Street, New York City. 8¾ x 11 in. 8 pp. Ill.

WELDING AND CUTTING EQUIPMENT

"Torchweld." Welding torch safety construction illustrated. Torchweld non-flash welding torches and units. Automatic welding torches; decarbonizing torch and cutting heads. Cutting torches and units. Safety construction. Non-flash cutting units, etc. Gas pressure regulators. Torchweld accessories and supplies. Torchweld Equipment Co., 224 No. Carpenter Street, Chicago, Ill. 8½ x 11 in. 39 pp. Ill.

RADIO CONVENIENCE OUTLETS

"Radio Convenience Outlets for Residences, Hospitals, Schools, Hotels, Apartments, Etc." For loud speaker connections. For several loud speaker connections. Aerial and ground connections. Wiring suggestions for installing Yaxley Radio Convenience Outlets. Yaxley Manufacturing Co., 1528 West Adams Street, Chicago, Ill. 8½ x 11 in. 16 pp. Ill.

LANTERNS

"Hand Wrought Lanterns." 64 designs of lanterns. Also special designs to order. All hand wrought. Todhunter, Inc., 119 East 57th Street, New York City. 8½ x 11 in. 16 pp. Ill.

PLUMBING FIXTURES

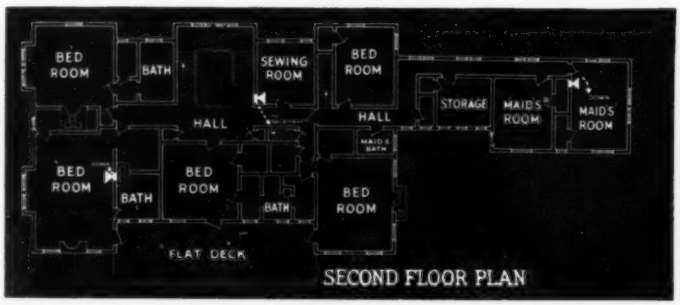
Various color schemes for bathrooms carried out with "Standard" plumbing fixtures. 18 colored plates showing bathrooms with colored fixtures. Various styles of finishes for mastercraft and all-metal round design fittings for "Standard" lavatories. Standard Sanitary Manufacturing Company, Pittsburgh, Pa. 6 x 9 in. Ill.

FIREPLACES

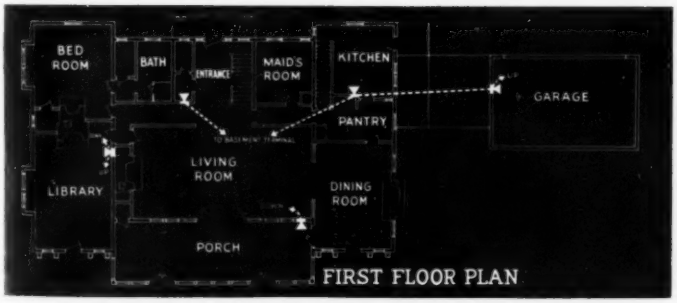
"Donley Book of Successful Fireplaces." Story of the fireplace. Designs. Bedroom fireplaces. Library and den.

Communication *within* the Residence . . . over the Regular Bell Telephones

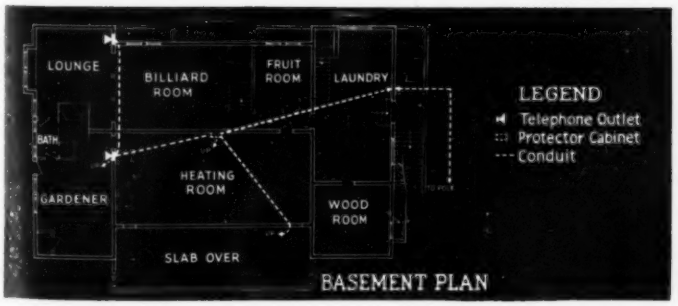
Ten telephone outlets, including one in the garage and two in the basement, provide complete telephone convenience in the residence of Mr. A. W. Treadwell, 579 San Elijo Ave., San Diego, Calif. HAYWARD PIERCE, Architect, *San Diego.*



SECOND FLOOR PLAN



FIRST FLOOR PLAN



BASEMENT PLAN

IN DESIGNING a residence, it is often desirable to provide for communication within the house . . . bedroom to kitchen, for instance, or library to garage . . . as well as to the outside. Home owners find this especially convenient for conducting household business, receiving incoming calls or talking to people in other parts of the house. Bell System equipment makes it possible to have this intercommunication over certain of the house telephones, without interfering with outside calls.

This is but one of the many features of modern telephone convenience. The basic thought is to have the telephones sufficient in number, and so located, as to bring the greatest possible ease and comfort in the use of the service.

Conduit for the telephone wiring is specified throughout the house, making outlets available in every important room. Telephones can then be had just where the occupants want them. And they can enjoy the improved appearance which comes from concealed wiring.

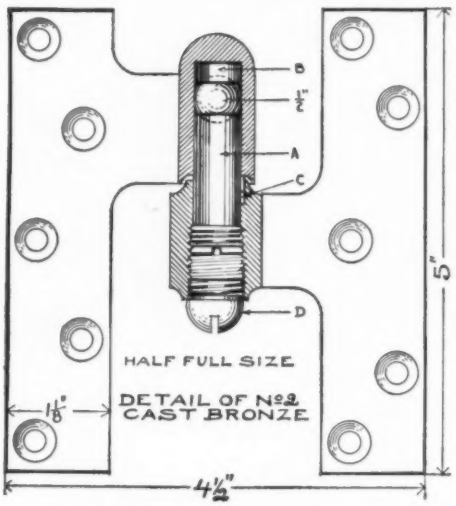
The telephone company is constantly studying ways to improve its service. It will gladly co-operate with architects in helping to plan the best telephone arrangements for particular building projects. When intercommunicating service is involved, this consultation is particularly important. There is no charge. Just call the Business Office.

AMERICAN TELEPHONE & TELEGRAPH CO. AND ASSOCIATED COMPANIES — BELL SYSTEM

for
those who
have sought
a hinge that's

powerful
adjustable
dependable

Rixson
Adjustable Ball Hinge



It may not be outside your past experience to discover an adjustable hinge. But one in which adjustability is incidental to strength and ball-bearing action is a "find."

Within the Rixson Adjustable Ball Hinge you find Pivot A (above), cup bearing B and the half-inch ball all of hardened steel, and the remaining parts special bronze. Here is strength beyond any usual requirement, plus smooth frictionless action.

In addition the maintenance man's screw driver is an easy cure for the door that drags.

SEE OUR CATALOGUE SWEETS

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4450 Carroll Avenue Chicago, Ill.
New York Office: 101 Park Ave., N. Y. C.
Philadelphia Atlanta New Orleans Los Angeles Winnipeg

RIXSON
Builders' Hardware

RECENT TRADE PUBLICATIONS—(Continued)

On the porch and in the basement. For summer cottages and cabins. In public buildings. Apartment houses. Ready-made fireplaces. Construction plans and sketch of Donley fireplace. Table of dimensions. Details. Ash dumps. Andirons. Fire sets, etc. A portfolio of fireplace designs. Fireplace building for the amateur. The Donley Brothers Company, Cleveland, Ohio. 8½ x 11 in. 68 pp. Ill.

SPEED HEATERS

"The High Spots about Speed Heaters." Industrial and cabinet types speed heater. Specific installations. Advantages: immediate results in temperature control and economy. Two speed motors. Simple hangers. High pressure aerofin. Vertical Louvres. Thermostatic control. Layouts for suggested methods of suspension, dimensions and method of installing. Piping diagrams. Wiring diagrams. Capacity tables. B. F. Sturlevant Co., Hyde Park, Boston. 11 x 8½ in. Ill.

AIR CONDITIONERS

"Controlled Humidity." Silent and automatic air conditioner. Humidifier. Motor and fan. Advantages: drives air over surface of water so that it takes up required moisture and releases its dust and odors to the water. The Humitrol—a device for controlling humidity. Salenoid valve and special mercoid control. Specific installations. Layouts showing details of typical arrangement of connections to the air conditioner. The Lewis Corporation, Minneapolis. 8½ x 11. 5 pp. Ill.

CONDULETS, ETC.

"Condulets, Groundulets, Plugs, and Receptacles." Catalog 2200. Tables of sizes, types, styles, etc. Includes descriptive matter of Crouse Hinds other units. Air port lighting equipment. Electrical traffic signals. Catalog number index. Crouse-Hinds Co., Syracuse, N. Y. 11 x 8 in. 280 pp. Ill.

GREENHOUSES

"American Greenhouses." Art samples of conservatories, show houses, palm houses and solariums. Layout and picture of noted greenhouses with specifications. Specific examples. Blue prints of conservatories. American Greenhouse Manufacturing Co., Linden, N. J. 15 x 12 in. 192 pp. Ill.

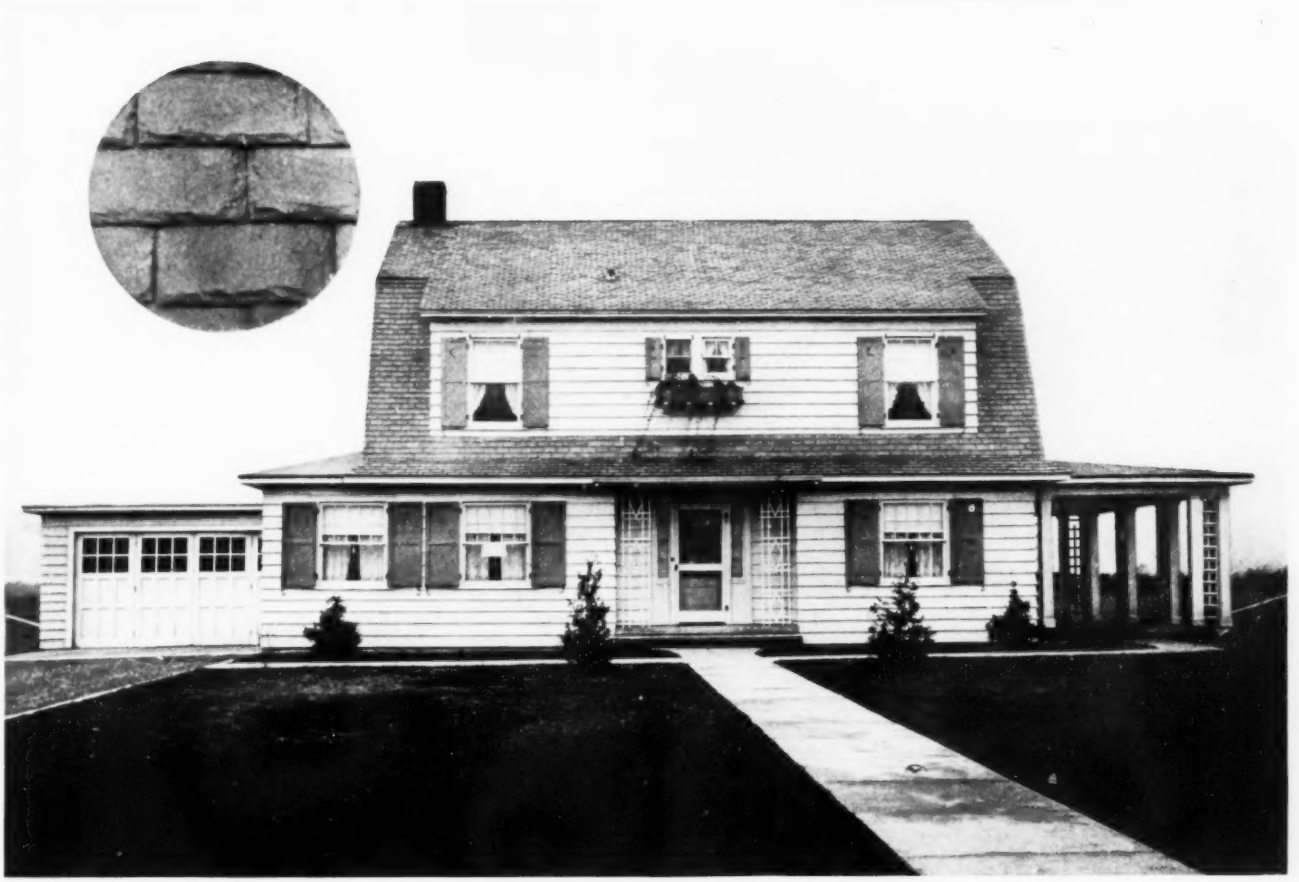
TILES

"Patina Glazes." Mixed blends in bathroom tile installations. Patine-inset bathroom accessories. Crinkle mosaics. Sketches of typical figure tiles, borders, etc. Bathroom design. Batchelder-Wilson Company, Los Angeles, Cal. 8¾ x 11½ in. 23 pp. Ill.

STOKERS

"Type A-1 Underfeed Stoker." Importance of boiler and stoker being made in one plant. Advantages of stoker and boiler being manufactured in same plant. Automatic dual air and coal control. Advantages: economy, perfect combustion, steady steam pressure, elimination of smoking nuisances, volatile gases driven off and consumed. Specific installations. Side Dump type. Graphic steam pressure charts comparing hand and stoker firing. The Brownell Co., Dayton, O. 8½ x 11 in. 12 pp. Ill.

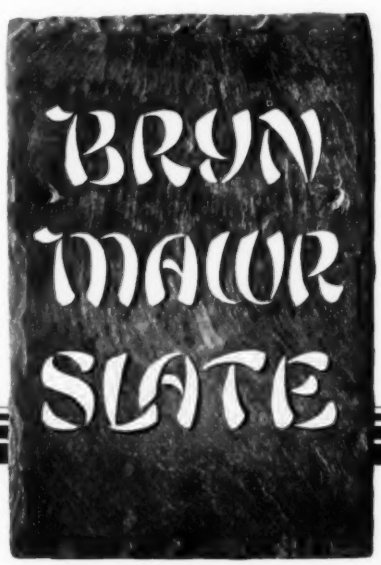
BRYN MAWR SLATE



A BRYN MAWR Slate Roof, by Owen W. Owen's Sons, Inc., on a modern residence of the simpler type that lends itself so well to the rugged, old-world directness of this oldest of all types of roofing. Thickness of edge and gradation in reveal have much to do with the harmony of the whole.

Slate has the somewhat unusual virtue of looking just right whatever the type of residence it is used for. Analysis invariably shows, however, that credit is by no means due only to the slate itself, but to skillful variation in tone and tint and to control of graduated sizes and exposure to the weather. On such matters our years of experience are at your service. BRYN MAWR Vermont Slate is supplied in all desired tints, colors, sizes and thickness, for every variety of roofing, flagging and interior work—and comes from a firm that have been specialists in slate and its most effective use since 1884.

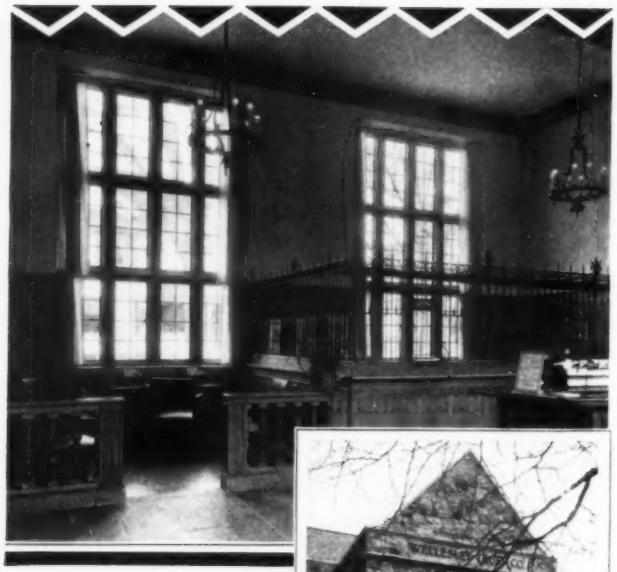
See Sweet's, Vol. B, page 1737



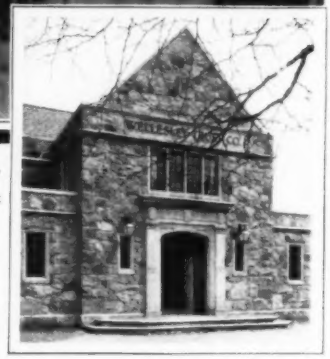
OWEN W. OWENS SONS, INC.

Established in 1884

Granville - - - - - New York



Wellesley Trust Co., Wellesley, Mass.
Higgin Screened Throughout
Mr. Benjamin Proctor, Jr., Architect



These Screens

Accentuate the Beauty of Every Opening

Every Higgin, all-metal Screen (Hinged, Rolling or Sliding) is specifically designed not only to protect, but to definitely enhance the charm and character of the opening it adorns -- individually built to accentuate the architectural harmonies that surround it.

Thus Higgin screens become an artistic factor in all distinctive residence and buildings -- a factor that you, as an architect, will naturally appreciate.

The special Higgin representative in your locality is at your service, always. He possesses the practical experience and creative ability to turn out the type of screening job you desire.

You have undoubtedly found that it does pay to use good screens -- and in Higgin you are assured of the *best*.

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Screen Specialists since 1893
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HIGGIN
ALL METAL SCREENS

AIA File No. 35P1 -- Screens.
Refer to Sweet's for complete data on Higgin All-Metal Frame and Rolling Screens, All-Metal Weatherstrips, and Access Panels. Folder on Venetian Blinds.

CLASSIFIED DIRECTORY OF ADVERTISERS

Alphabetical Index to Advertisers, Page 176

After reviewing advertisements in this issue—use Sweet's Architectural Catalogues for 1930 for catalogue and specification information on the products of the most of the manufacturers.

Acid Proof Chemical Stoneware
Knight, Maurice A.

Acoustical Installation—Guastavino, R., Co.

Acoustics
Boston Acoustical Eng. Division of Housing Company
Johns-Manville Co.

Air Compressors
Westinghouse Traction Brake Co.

Air Conditioner
Lewis Corporation

Arc Welding—Lincoln Electric Co.

Architectural Faience
Associated Tile Mfrs.

Architectural Supplies
American Pencil Company
Higgins, Chas. M., & Co.

Artstone—Rackle, George, & Sons Co.

Asbestos—Johns-Manville Corporation

Balances, Sash—See Sash Balances

Basement, Windows—Steel
Detroit Steel Products Co.
Kalman Steel Company
Truscon Steel Company

Beads—Corner Metal
Concrete Engineering Co.
Genfire Steel Company
Kalman Steel Company
Milwaukee Corrugating Co.
Truscon Steel Company
Wheeling Corrugating Co.

Beams, Angles, Channels, Etc.
Carnegie Steel Company

Blackboards—Weber Costello Co.

Blinds—Venetian—See Venetian Blinds

Boiler and Pipe Covering
Johns-Manville Corporation
Ric-wiL Company

Boilers—American Gas Products Co.
American Radiator Co.
Badger, E. B., & Sons Co.
Bryan Steam Corp.
Smith, H. B., Company, The, Inc.

Bolts—Door—Corbin, P. & F.

Brass and Bronze
See "Ornamental Metal"

Brass and Copper
See "Copper and Brass"

Brick
Finzer Bros. Clay Co.

Bridges—Steel—American Bridge Co.

Builders—Stone & Webster, Inc.

Building Paper—Bird & Son, Inc.

Buildings—Steel
Carnegie Steel Company
Nat'l Assoc. of Flat Rolled Steel Mfrs.

Butts—Corbin, P. & F.
Stanley Works

Cabinet Work—Hyde-Murphy Co.

Cabinets—Kitchen
Circle A Products Corp.

Cabinets—Radiators
Tuttle & Bailey Mfg. Co.

Casement Operators—Rixson, Oscar C., Company

Von Duprin

Self-Releasing Fire and Panic Exit Latches

How to Get What You Want

When you specify Von Duprin latches for a particular building, you expect genuine Von Duprins to be delivered. It goes without saying that you get what you specify in nearly every instance. There are, however, isolated cases in which the architect does not get what he specifies. There should be no trouble about getting genuine Von Duprin latches. All reputable hardware dealers can buy them—at the same fair prices. But there have come to our attention instances in which Von Duprin latches have been made an item of the finishing hardware specification, only to have the occasional unscrupulous dealer take advantage of that form of specification to substitute other devices as part of the finishing hardware contract.

The safe way is to make panic devices a separate item of the specifications, and—of course—to specify the devices by name.

VONNEGUT HARDWARE CO.
Indianapolis, Ind.

Listed as Standard by Underwriters Laboratories

Good Architecture Teaches Enjoyable Living---

King
GREENHOUSES

The well planned houses of today show the way to gracious living.

HOW KING GREENHOUSES HELP

King Greenhouses make a pleasing prospect. Their trim lines and graceful curves blend well with fine house designs. They give the owner's family an avocation, and avocations are the measure of enjoyable living. What could give more pleasure than growing beautiful flowers, exotic plants, and vegetables under ideal conditions, the year round?

Our Architects' Service Department will be pleased to send you information in detail and sketches showing how the proper King Greenhouse may be incorporated in your plan. Write for Architects' folio of plates.

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Lockport, N. Y.

KING CONSTRUCTION COMPANY
North Tonawanda, N. Y.

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Detroit Steel Products Co.
International Casement Co.
Lupton's, David, Sons Co.
Truscon Steel Company

Cast Iron Soil Pipe—Soil Pipe Association

Cast Stone
Cast Stone Institute

Caulking and Glazing Compound
Arco Company

Cellar Drainer
Penberthy Injector Co.

Cement—Atlas Portland Cement Co.
Kosmos Portland Cement Co.
Louisville Cement Company
Medusa Portland Cement Co.
Portland Cement Association
U. S. Gypsum Co.

Cements—Stone—See Stone Cements

Cement White
Medusa Portland Cement Co.

Chain Sash—American Chain Co., Inc.
Detroit Steel Products Co.
Smith & Egge Mfg. Company

Channels—Carnegie Steel Co.
Concrete Engineering Co.
Genfire Steel Co.
Kalman Steel Co.

Church Memorials
American Seating Company

Clamps—Lock Joint
Hyde-Murphy Co.

Clay Vitrified
Clay Products Association

Coal Doors
Kalman Steel Company

Columns, Porches, Etc.
Hartmann-Sanders Co.
Union Metal Mfg. Co.

Compressors—Air
Westinghouse Traction Brake Co.

Concrete Accelerator
Master Builders Co.
Solvay Sales Corp.

Concrete Construction—Reinforced
American Steel & Wire Company
Concrete Engineering Co.
Genfire Steel Company
Kalman Steel Company
Truscon Steel Company
U. S. Gypsum Co.

Concrete Hardener
Master Builders Co.
Sonneborn, L., Sons, Incorporated
Solvay Sales Corp.

Concrete Piling—See Piling Concrete

Concrete Surface Treatment
Master Builders Co.
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Conduit for Underground Heating Pipes
Ric-wiL Company

Coping Wall
Clay Products Association

Copper and Brass
Baltimore Copper Mills
Revere Copper & Brass, Inc.

Copper Sheets
Baltimore Copper Mills
Revere Copper & Brass, Inc.

Cork Covering
Armstrong Cork & Insulation Co.

Cork Tile Flooring
Armstrong Cork Company, Custom Floors Dept.

Corkboard
Armstrong Cork & Insulation Co.

Covering—Pipe and Boiler
Armstrong Cork & Insulation Co.
Johns-Manville Corporation
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Door Closers—Corbin, P. & F.
Norton Door Closer Co.
Sargent & Company

Door Ventilators
Airolite Company

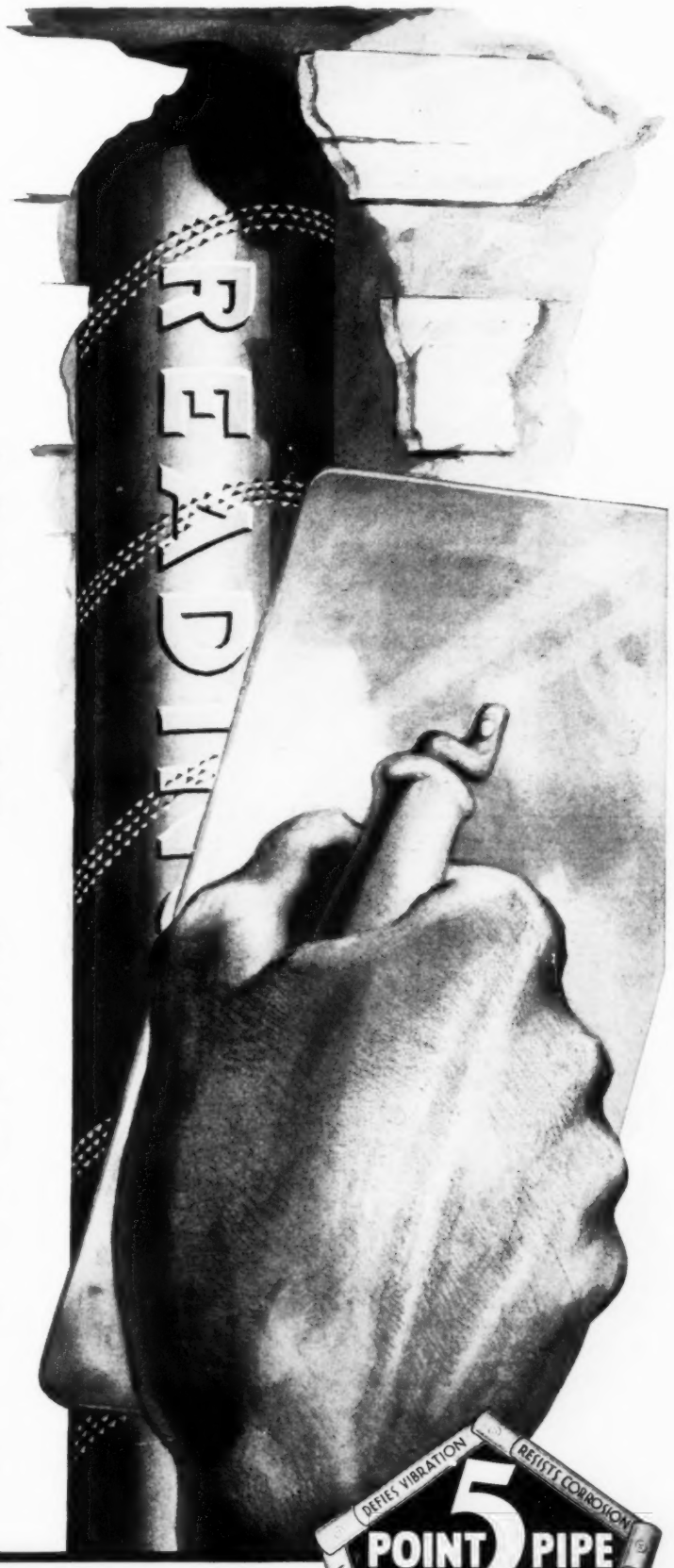
This Job Is Finished

THERE will be no "hurry up" calls from dissatisfied owners or tenants on the pipe installation shown here. Pipe failures from rust, breakage or leaky joints will be eliminated for years upon years, for this pipe is tough, time-defying Reading 5-Point Pipe, made of Genuine *Puddled* Wrought Iron.

Because it outlasts the building, Reading 5-Point Pipe means sizable savings for those who use it, and profitable prestige for those who specify and install it. Moderate in price? Let us give you the astonishing facts—get in touch with our nearest branch today!

READING IRON COMPANY
Reading, Pennsylvania

Atlanta	Cincinnati	Pittsburgh	Fort Worth
Baltimore	Detroit	Cleveland	Seattle
Boston	Houston	St. Louis	Philadelphia
Buffalo	Los Angeles	Tulsa	New Orleans
Chicago	New York	San Francisco	Kansas City

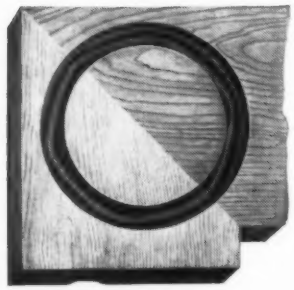


GENUINE PUDDLED WROUGHT IRON
READING PIPE
DIAMETERS RANGING FROM 1/8 TO 20 INCHES

Every wood joint

permanent and perfect

—if your Contractor uses the Evans Ring Joint Machine



Our Model M Machine—(illustrated)—makes any single joint in fifteen seconds, cutting the groove and seating the locking ring without moving the stock on the table. One man operation, saving time and labor cost and turning out jointed woodwork ready for *immediate* use. The Model M handles stock from 3/8" to 2" in thickness, and uses 1½", 1¾" or 2" rings according to requirements. On your next job, have your woodwork contractor write us for sample joint, prices and terms for machine and rings.

W. L. EVANS
Washington. Indiana

The above—Evans ring joint machine Model M, electrically operated—one man control.

Door and Window Frames
Andersen Frame Corp.

Doors—Art Metal Const. Co.
Bayley, William, Company
Compound & Pyrono Door Co.
Cornell Iron Works, Inc.
Dahlstrom Metallic Door Co.
Detroit Steel Products Co.
Genfire Steel Company
Hamlin, Irving
Hyde-Murphy Co.
International Casement Co.
Peelle Company, The
Richmond Fireproof Door Co.
Sanymetal Products Co.
Security Fire Door Co.
Thorp Fire Proof Door Company
United Metal Products Co.
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Wilson, J. G., Corp.

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Josam Mfg. Co.

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Higgins, Chas. M., & Co.

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Guth, Edwin F., Co.
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Peelle Company, The
Security Fire Door Co.
Tyler Company
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Elevator Inclosures
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Elevators
Otis Elevator Company
Sedgwick Machine Works
Tyler Company
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Enamels—Arco Company
Du Pont de Nemours, E. I., & Co., Inc.
Pratt & Lambert, Inc.
U. S. Gutta Percha Paint Co.

Engineers—Inspection
Hunt, Robert W., Company

Expanded Casings—Milwaukee Corrugating

Expanded Metal
Genfire Steel Company
Kalman Steel Company
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Fence Post—Steel
American Steel & Wire Co.

Fence—Woven Wood
DuBois Fence & Garden Co., Inc.

Fences—American Steel & Wire Co.
Fiske, J. W., Iron Works

Finishing Lime
Ohio Hydrate & Supply Co.

Fire Exit Devices
Vonnegut Hardware Company

Fireplace Unit—Heatilator Co.

Fireproof Doors, Shutters and Windows
Cornell Iron Works, Inc.
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Richmond Fireproof Door Co.
Thorp Fire Proof Door Company
Truscon Steel Company

THE ART OF THE ANCIENTS PRE-CAST FOR THE NEW-DAY NEED..

Where an enduring material, truly modern as well as a distinctive work of art, is required to meet a specific need, Marcrome will serve you to accomplish your objective; to achieve in your creations lasting monuments of present-day architecture.

Marcrome—the pre-cast concrete marble floor tile, stairwork, cove base and wainscoting—gives full sweep to the creative mind which seeks to develop enduring effects of genuine artistic merit and practical utility. Non-absorbent, and non-slip if required, it answers the insistent call for a material of unlimited life, distinctive colors and original design.

Concrete Marble Company, St. Louis, U.S.A.

PRE-CAST

MARCROME
CONCRETE MARBLE

Durability with color and design—non-absorbent—non-slip.
For floors—walls—stairwork.

A Combination for Every Kitchen Need

THE range of styles and sizes in Circle A Kitchen Units is so complete that any kitchen, kitchenette, or pantry can be accurately fitted.

Circle A Kitchen Units are the result of actual experience in meeting kitchen needs in modern homes and apartments throughout the country. Wherever found—commendable features have been incorporated—to provide an array of features equaled nowhere else.

The lines are clean and proportions are good—construction and materials are the finest.

Shipped completely assembled and finished (in choice of four colors) with three coats of high grade enamel—interior and exterior. Each unit is completely enclosed, to make it vermin-proof.

Send for file size brochure, detailing these better kitchen units.

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688 S. 25th Street, Newcastle, Indiana
New York Office: Farmers Loan and Trust Bldg.
475 Fifth Ave., New York, N. Y.

CIRCLE A KITCHEN UNITS
· · · Fit Any Space · · ·

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United Metal Products Co.
Fireproofing
See "Concrete Construction," "Covering, Pipe and Boiler," "Fireproof Doors, Shutters and Windows," "Lath-Metal," Tile.
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Floor Covering
Bird & Son, Inc.
Congoleum-Nairn Co.
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Floor Plates—Wood, Alan Steel Co.
Flooring
Armstrong Cork Co. (Flooring Division)
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Master Builders Co.
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Flooring—Composition
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Flooring—Engineers and Contractors
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Floors—Fireproof
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Footlights—Kliegl Bros.
Fountains—Drinking
Century Brass Works Inc.
Rundle-Spence Mfg. Co.
Taylor, Halsey W.
Furniture—American Seating Co.
Furniture Metal—Art Metal Const. Co.
Garage Engineers—Ramp Buildings Corp.
Garage Hardware—Corbin, P. & F.
Garden Furniture and Ornaments
Hartmann-Sanders Company
Gas Boilers
American Gas Products Co.
American Radiator Co.
Bryant Heater & Mfg. Co.
Gas Ranges—American Stove Company
Glass—Window
Adamston Flat Glass Co.
American Window Glass Co.
Pittsburgh Plate Glass Co.
Glass Wire—See Wire Glass
Granite
Bates Bros. Seam Face Granite Inc.
National Bldg. Granite Quarries Assn.
Woodbury Granite Co., Inc.
Greenhouses—King Construction Co.
Grilles
Art Metal Const. Co.
Highton, Wm., Sons, Division of Hart & Cooley Mfg. Co.
Wickwire-Spencer Steel Co.
Gypsum Plaster—See Plaster, Gypsum
Gypsum Slabs—Structural Gypsum Corp.
Hardware—Corbin, P. & F.
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Soss Manufacturing Company
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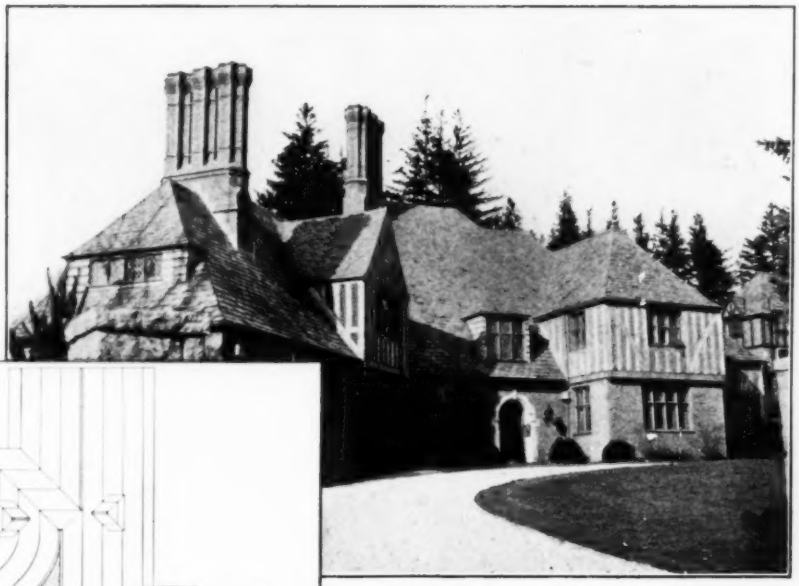
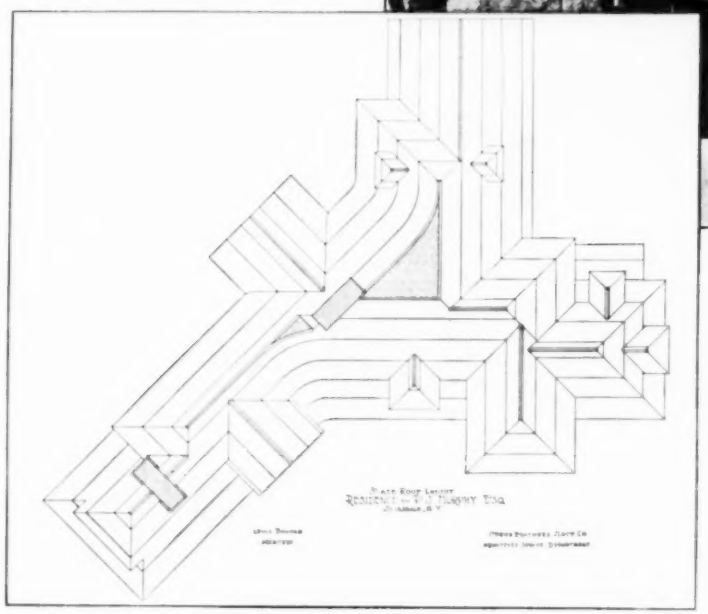
Vonnegut Hardware Company
Yale & Towne Mfg. Co.
Heat Insulation
Johns-Manville Corporation
Ric-wiL Company

O'BRIEN BROS. offer the ARCHITECT "The Custom-Made Roof"

The P. J. Murphy residence at Scarsdale, New York, accompanied by a plan of the actual roof layout as worked out by the O'Brien Bros. Architects' Service Department. The architect was Lewis Bowman, Bronxville, N. Y.

O'Brien Bros. Architects' Service Department will be glad to prepare plans and specifications for architects for "The Custom-Made Roof". Correspondence is invited on this subject.





SPECIFICATIONS FOR THIS ROOF

Exposures 9½" to 3½". Thicknesses intermixed, 1" to 3/16", with larger percentage of thicker slate at the eaves, gradually diminishing to thinner slate at the ridge. Texture semi-rough. Color uniformly intermixed throughout, in soft green, shaded gray, and assorted rustic bronze and buff freaks on Vermont black and grey slate base.

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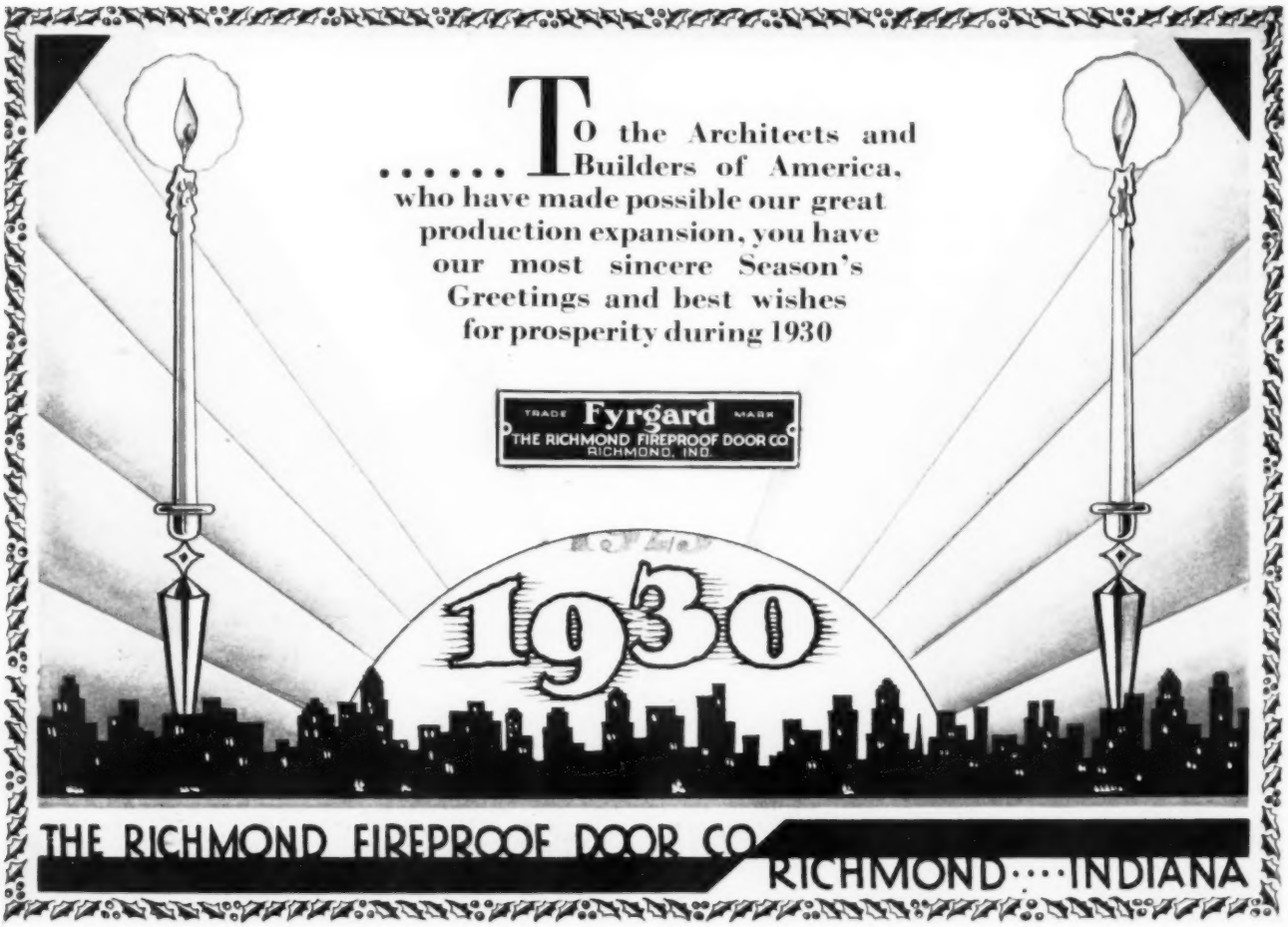
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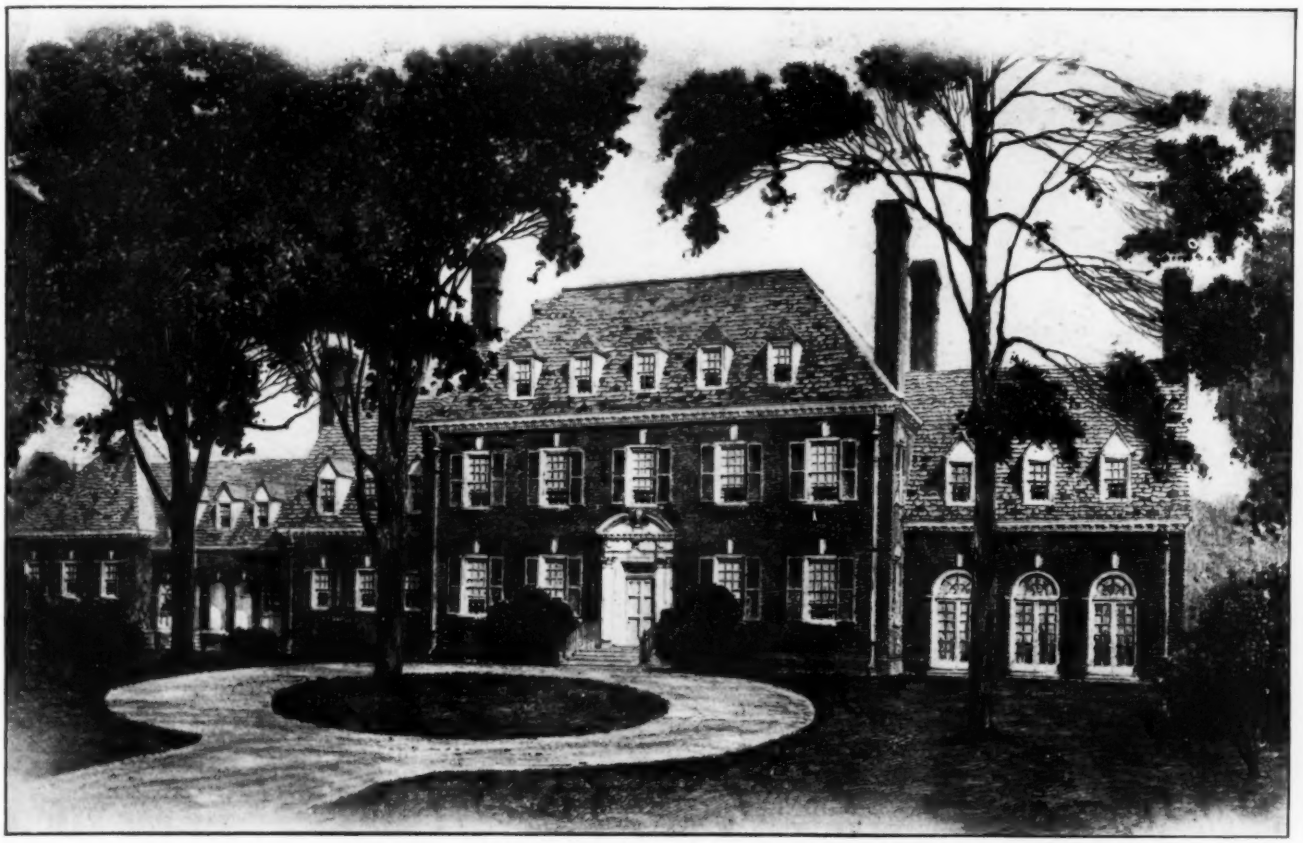

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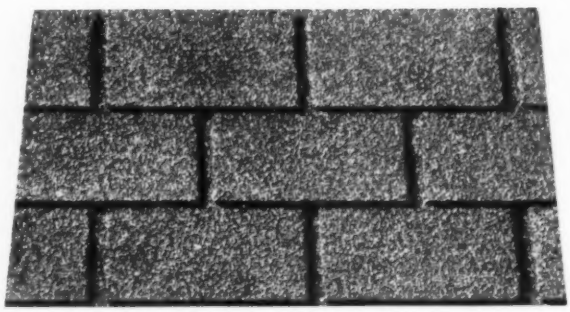

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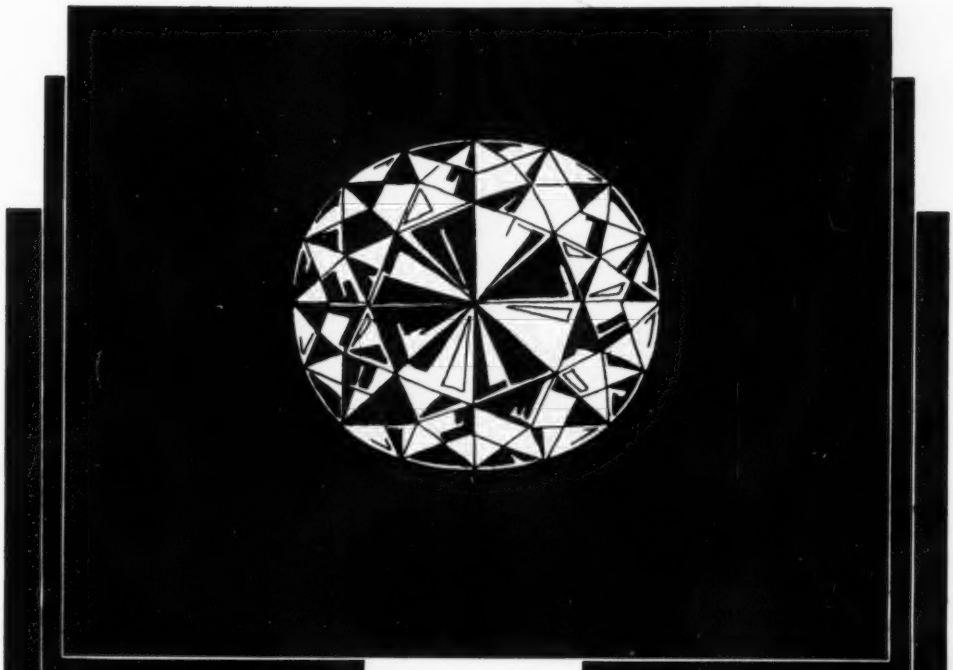

The *Koh-i-noor*, which in 1739 was in the possession of Nadir Shah, the Persian conqueror, passed into the hands of the East Indian Company and was by them presented to Queen Victoria in 1850. It now weighs 106$\frac{1}{16}$ carats, and is the same gem as that referred to by the Mogul Baber in his memoirs (1526) as the great diamond he captured at Agra during his conquest of India.

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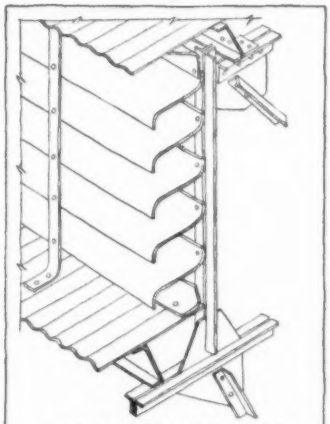

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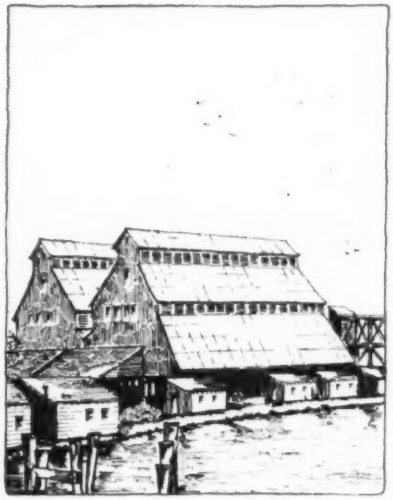

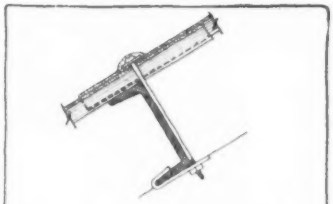

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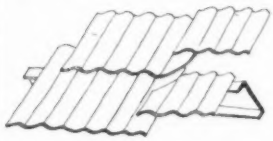

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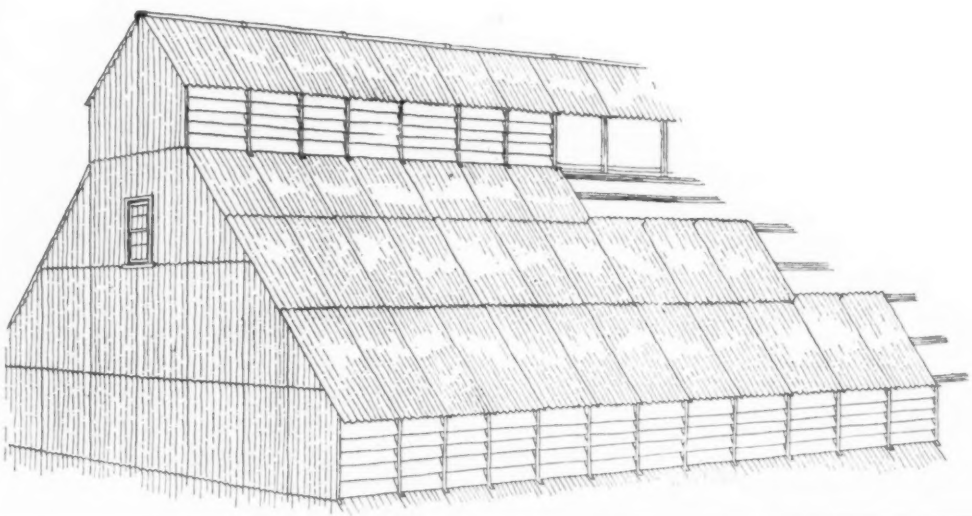
· TYPICAL DETAILS ·

TRANSITE CORRUGATED ASBESTOS
ROOFING & SIDING



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Complete literature on this subject will be promptly forwarded at your request.

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Manufacturer of Medusa Gray Portland Cement (Plain and waterproofed); Medusa Waterproofing (Powder or Paste); Medusa White Portland Cement (Plain and Waterproofed); Medusa Portland Cement Paint and Medusa-Mix, The Masonry Cement.

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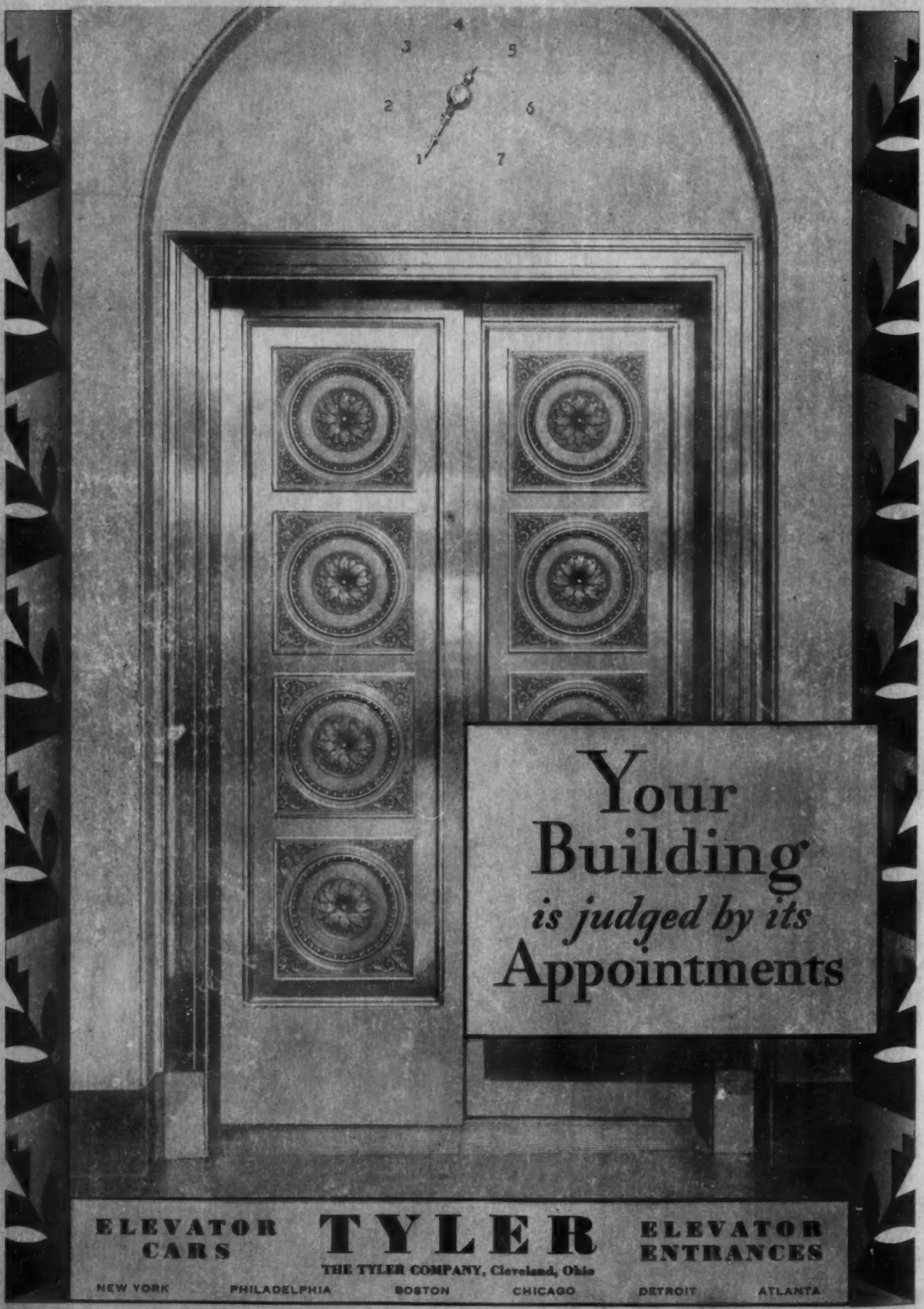
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